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Findings & Recommendations Regarding a Conceptual Free-Product Remediation Strategy

L.E. Carpenter & Company
Wharton, New Jersey

USEPA ID No. NJD002168748

March 2002

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Section 1
Introduction

1.1 Background

Subsurface investigation and remedial action activities have been ongoing at the former L.E. Carpenter & Company (LEC) facility since the initial Administrative Consent Order (ACO) was executed in 1982. The 1982 ACO was amended in 1983 and 1986. The September 26, 1986 ACO superceded both the 1982 and 1983 documents, and required LEC to undertake a Remedial Investigation/Feasibility Study (RI/FS). The field portion of the RI was conducted by Roy F. Weston (WESTON) and GeoEngineering (GE) between February and November 1989. Results of the 1989 RI were reported to the United States Environmental Protection Agency (USEPA Region II) and New Jersey Department of Environmental Protection (NJDEP) in the documents entitled *Report of Revised Remedial Investigation Findings, L.E Carpenter and Company, Wharton, New Jersey Site* (GeoEngineering and Roy F. Weston, June 1990), and *Supplemental Remedial Investigation, L.E Carpenter and Company, Wharton, New Jersey Site* (Weston Services Inc., November 1990).

As identified in the RI, primary dissolved phase contaminants of concern in the groundwater are ethylbenzene, xylenes, and bis (2-ethylhexyl) phthalate (DEHP). Based on the analytical results of historical free product sampling conducted by both WESTON and RMT, Inc. (RMT), a zone of immiscible free and residual product in the site soils is considered the major source of dissolved-phase contaminants of concern in the shallow groundwater.

Immiscible product removal was identified in the 1994 Record of Decision (ROD) as Phase I of remediation for site groundwater, to be followed by Phase II, recovery and treatment of dissolved constituents in the groundwater, once the immiscible product was removed. Immiscible product recovery was initiated during the early 1990's, first with skimmer pumps in select wells, and then with mobile enhanced fluid recovery (EFR) in 28 wells screened within the immiscible product zone.

The *Free Product Volume Analysis* (RMT, May 2000) concluded that a total volume of approximately 44,000 gallons of immiscible product existed in the source area, of which approximately 8,000 to 13,000 gallons were considered recoverable. Based on fourth quarter 2001 EFR monitoring results, an extracted product volume to date of 3,277 gallons has been removed from the subsurface utilizing this methodology. Subsequently, 4,700 to 9,700 recoverable gallons of product are thought to remain.

RMT has raised concerns about the effectiveness and efficiency of product recovery by any *in situ* collection mechanism (*i.e.*, collection trench, sumps, recovery well network) without further physical and chemical evaluation of both the site subsurface and the product properties. RMT has been concerned as to whether extraction of recoverable light non-aqueous phase liquid (LNAPL), as opposed to a more exhaustive LNAPL remedial approach (*i.e.*, removal of both the recoverable and non-recoverable product volume) would be considered sufficient by both the United States Environmental Protection Agency Region II (USEPA) and the New Jersey Department of Environmental Protection (NJDEP) as the volume of residual (non-recoverable) product remaining on-site would act as a continuing source of shallow groundwater contamination.

A conference call between RMT, LEC, the USEPA and NJDEP was held on October 25, 2001. During the discussions all four parties agreed that evaluating and implementing a more robust approach to managing the existing immiscible product needed to be expedited. RMT recommended fast-tracking a remedial approach with a focus on ex-situ low-temperature thermal desorption (LTTD) as a potential remedial option. RMT recommended collection of additional data in the field to evaluate LTTD as well as data necessary to screen the viability of additional technologies, should moving forward with ex-situ LTTD prove infeasible. The document entitled *Workplan To Evaluate Free Product Remedial Strategies* was prepared by RMT in November 2001 on behalf of LEC in response to the October 25, 2001 conference call, and receipt of the comment letter from EPA and NJDEP dated August 23, 2001 regarding the document entitled *Enhancement of Free Product Recovery* (RMT, May 2001). NJDEP comments were received via email regarding the November 2001 Workplan on November 20, 2001. Subsequently, the *Amendment to Workplan to Evaluate Free Product Remedial Strategies* (RMT, November 30, 2001) was submitted to the NJDEP addressing agency and department comments. Approval of both the Workplan and Amendment (the Workplan) was received from the NJDEP via email on December 7, 2001.

1.2 Evaluation Approach

The Workplan presented a decision-tree analysis of the combined technology of soil excavation with ex-situ LTTD (see Figure 1). As outlined in the analysis, practicable excavation meant that soils could be excavated by standard construction methods, and groundwater influx in the open excavation would be minimal and easily controlled. Similarly, LTTD of excavated soils would require that stockpiling, moisture content, treatment standards, process water, and permitting issues were resolvable. If any major limitations, as determined by field investigation and subsequent engineering evaluations, making either soil excavation or thermal treatment impracticable or too costly, other *in situ* or ex-situ technologies needed to be evaluated. In the interest of fast-tracking the implementation of a preferred alternative, RMT planned to collect sufficient data needed to evaluate other alternative technologies: (1) should thermal treatment be determined infeasible, and (2) to compare other elements relating to groundwater control and material handling. Figure 1 delineates the actual decision pathway determined during this investigation.

1.3 Data Objectives

The Workplan presented a matrix of potential technologies and the technical data and regulatory information needed to assess those technologies. Figure 2 summarizes that matrix and the data collected and evaluated to support analysis of remediation technology alternatives. Generic technologies that include containment, hydraulic control, groundwater extraction, and source removal require analysis of geotechnical and hydrogeologic data as well as chemical and physical characterization of the free product. Any evaluation of ex-situ treatment technologies also requires the analysis of the same data, in particular that data necessary to evaluate the ability to remove and handle the soil for treatment.

1.4 Accomplishment of Objectives

As with any investigation program, unforeseen conditions, or combinations of conditions necessitate remapping the project or program direction. This evaluation is no exception. However, by following the course of the decision-tree analysis the evaluation has remained focussed on arriving at a practicable solution to the reduction of on-site free product. This Technical Memorandum summarizes the findings of these efforts to date and recommends further courses of action to be taken to arrive at a selected remedy to be proposed for final design and implementation. Section 2 presents an outline of the field and laboratory work accomplished to date. Section 3 presents RMT's geotechnical findings relative to excavatability of the soils and physical limitations regarding hydraulic controls. Section 4 presents a conceptual model of the contaminant source zone. It also discusses the product chemistry and results of literature searches on the physical properties of the product that might affect remediation technologies. Section 5 presents the recommended approach to excavate soils and recover immiscible product. Section 6 presents our findings on soil treatment and disposition. Summary conclusions of our recommended path forward for the remedial strategy are presented in Section 7.

Section 2
Test Pit Installations

On December 10, 2001 RMT mobilized to the L.E. Carpenter site to conduct exploratory test pits and collect soil samples for physical and analytical laboratory analyses as outlined in Task 1 of the Workplan. Because of scheduling constraints, Task 2 of the Workplan that called for installation of product recovery wells in each of the three test pit locations and subsequent free product sampling of these wells was postponed. This was a result of the need to have a New Jersey licensed well driller and well permitting approved for installation of the "standpipe" wells in the backhoe excavated test pits. Postponement of this task was not critical however, as results of the physical field work were first needed to determine whether or not collection of free-phase product was appropriate. Thus, product extraction wells could be installed at a later date, if testing of free product or hydraulic recovery tests were necessary.

2.1 Primary Test Pit Installations

Test pit excavation was performed by Custom Environmental Management Co., Inc. (CEMCO, "the subcontractor") of Hainesport, New Jersey using a CASE 590 trackhoe with a 30-inch wide bucket. Excavation work was directed and observed by John Mihalich and Drew Diefendorf of RMT. Three primary Test Pits TP-1, TP-2 and TP-3 were excavated at locations shown on Figure 3. As outlined in the workplan, these pits were sited to intercept areas anticipated to contain "productive" zones of free immiscible product, based on results of quarterly EFR activities and well network measurements. Logs of these test pits are presented in Appendix A and photographs of selected pits are included in Appendix B.

Prior to excavation, a layer of polyethylene sheeting was placed on the ground surface to separate the excavated soils from the surficial soils. When product saturated soils were encountered, they were placed on excavated bench walls within the pit, or left at the base of the pit. Test pits were excavated to a depth of one to two feet below water table. Samples of soils were obtained during excavation by using disposable plastic trowels to scoop samples directly from the backhoe bucket. Upon RMT completion of test pit logging activities and collecting all samples at each of the three primary test pits, the excavation subcontractor placed a 3- to 4-foot thick layer of ¾-inch crushed stone in a sump excavated at the center of the base of each primary pit. In the event that installation of fluid recovery wells became necessary, this crushed stone sump would act as a permeable product collection zone into which a well screen could be effectively located. Test pits were then backfilled by the subcontractor with excavated soil being placed in the reverse order that it had been removed. The excavation subcontractor scraped and decontaminated the backhoe bucket between test pits.

2.2 Test Pit Sampling and Testing

2.2.1 Geotechnical

RMT visually observed soil excavatability. We also took photographs (Appendix B) to illustrate the stratigraphy and relative grain size of the subsurface materials. As a result of the coarse-grained nature of the materials encountered, meaningful in-place compressive strength testing of the soils using a pocket penetrometer was not possible. RMT collected soil samples from three different horizons within each test pit and placed them into one-gallon bags for shipment to RMT's soil testing laboratory in Madison, Wisconsin. Table 1 presents the elevations at which samples were collected within each pit. The percentage of fine-grained material was insufficient to perform meaningful Atterberg Limits or other geotechnical tests that would normally be performed, if the soils exhibited higher contents of silt- and clay-sized particles. Therefore, RMT ordered only grain-size distribution tests to be performed by the soils laboratory.

2.2.2 Fluid Properties

RMT observed and noted hydrogeologic conditions at each pit. We measured elevations of product and/or water-saturated zones. Where possible, RMT estimated the relative flow rates of groundwater in the pits. For safety reasons, we did not leave pits open to observe longer-term accumulation of groundwater or immiscible product.

2.2.3 Analytical Sampling

RMT collected three 15-ounce samples from different horizons at each pit for testing of metals to establish baseline conditions prior to potential thermal treatment. These samples are being held by RMT, pending a decision on LTTD bench scale testing. Sample horizons at each pit are indicated on Table 2.

To characterize the product zone, RMT collected one set of samples from each test pit that was representative of product-containing soil material. Each set consisted of a sample for testing the content of RCRA metals, volatile organics compounds (VOCs), semi-volatile organics compounds (SVOCs), and polychlorinated biphenyls (PCBs). RMT sent all samples to Severn Trent Laboratories (STL) in Edison, New Jersey for analysis. Table 3 lists the samples and corresponding sampling horizons.

2.2.4 Bench-Scale Testing Samples

One composite sample from the free product zone at each test pit was split by RMT into three three-gallon samples at each of the primary test pits. Samples and their sampling horizons are listed in Table 4. RMT shipped one sample from each pit to Hazen Research, Inc. (Hazen) in Golden, Colorado to be held pending a decision on performing LTTD bench scale analysis. Two additional three-gallon sets of samples from each pit are being held in reserve at the site for other potential bench-scale testing.

2.2.5 Free-Product Sampling

RMT did not collect free-product samples from each of the three test pits as recovery wells were not installed due to timing constraints. In the event that testing of free-product properties from each test pit becomes necessary for this evaluation, RMT will either have the wells installed, or collect samples from existing EFR wells in locations close to TP-1, TP-2 or TP-3. RMT did collect a free product sample from MW-11S (adjacent to TP-2). This sample was collected to gain a better understanding of the materials waste characteristics. A discussion of this issue and the associated analytical results is presented in Section 6.2.6

2.3 Supplemental Test Pit Installations

In addition to the installation of the three primary test pits, RMT directed the excavation of an additional set of supplemental test pits (TP-4 through TP-19) at locations indicated on Figure 3. Because of the coarse-grained nature of the soil encountered, installation of these test pits would further confirm the excavatability and soil variation at and around the potential area of the contaminant source. In addition, it was believed that these pits could help to better bound the area where free and/or residual product could be anticipated. Notes on these pits are included in Appendix C.

Section 3
Soil Excavation and Hydraulic Evaluation

This evaluation presents RMT's findings in a manner that follows the critical pathways of the decision tree analysis presented in the Workplan (see Figure 1). Some of the field results necessitate modification to and augmentation of these pathways, but the general logic of the analysis has remained consistent and helps to support the validity of our conclusions. The analysis of soil excavatability is linked to data needs outlined in the *Matrix of Potential Remedial Technologies* (see Figure 2). The results of physical data to evaluate excavatability are also useful in evaluating other potential remedial technologies. Therefore, conclusions reached regarding other technologies related to hydraulic controls or handling of soils will also be included in these discussions.

3.1 Grain-size Distribution Analyses

Critical to the evaluation of soil excavation is the granular nature of the soils encountered in the site subsurface. Valid grain-size distribution tests normally require that the soil sample contain one stone of the largest grain size and all smaller sizes in representative proportion. The grain sizes encountered at the LEC site range from as large as a refrigerator to silt and clay. Also a very high proportion of the soils at the site are greater than two inches in diameter. This makes submittal and processing of a truly representative sample from the site impracticable. Samples submitted to the soils laboratory were of the minus two-inch size fraction. RMT made visual estimations of the greater than two-inch size fraction for representative strata found at the three primary Test Pits. These observations are noted in Table 5 and show that as much as 65 percent of the soils beneath the site are made up of cobble- and boulder-sized materials.

Laboratory grain-size distribution curves are presented in Appendix D. To present these results in more meaningful terms for excavation, construction and physical property evaluation; RMT selected samples that appeared to represent the three predominant soil horizons encountered on the site (samples GT-1-1, GT-3-3 and GT-3-2) and integrated the field estimations for the coarse fraction of those samples with the laboratory results. We then used these adjusted distributions to produce the grain-size distribution curves that typify the subsurface soil units (see Appendix E). These typical soil units are referred to in this report as Type 1, Type 2 and Type 3 Soils.

3.2 Stratigraphy

Using stratigraphic interpretations from earlier reports prepared by Weston between 1990 and 1994 that included old well logs, and new data from test pits installed in November and December by RMT, we constructed a conceptual stratigraphic profile A-A' along the line indicated on Figure 4. This figure also presents a historical collection of the locations of previous soil, groundwater, surface water, and Rockaway River sediment investigations, organic and inorganic Hot Spot excavations, and Waste Disposal Area excavations performed on this site. This historical information was reviewed by RMT and incorporated into this evaluation. As depicted on Figure 5, the stratigraphic profile indicates three natural stratigraphic units overlain by fill and debris. The typical soil units are described as follows:

3.2.1 Type 1 Soil

This soil unit, described as Sandy Bouldery Gravel, represents the dominant unit across the site. Consisting of a well-graded material from boulders to sand with ten percent or less of fine material, this colluvially- and alluvially-derived material exhibits high soil strength due to the grain-to-grain contact of the large particles. It also is anticipated to exhibit high hydraulic conductivity and ability to free drain due to the low percentage of fines. Little to no cohesive or sticky material or fine-grained lenses were encountered in this unit. The unit is anticipated to have generally low potential to retain residual product. The material is present at depth across the entire site.

3.2.2 Type 2 Soils

This unit, described as Silty Bouldery Gravel, represents a "dirtier" version of the Type 1 soils, having the same general gradation of particles but with a higher silt content. This material is anticipated to exhibit high strength and stability, somewhat lower hydraulic conductivity and drainability, and moderate to low capacity to retain residual product. Very little sticky or cohesive material was found in this unit, but occasional sand and silt seems may occur.

3.2.3 Type 3 Soils

Described as Clayey Silty Sand, this material of fluvial over-bank origin is found at shallow depths on the eastern portion of the site. While the material is generally coarse enough to exhibit moderate strength and stability, hydraulic conductivities can be anticipated to be lower and retention of residual product and pore water would be greater in this unit. The higher concentration of fines may also make this material sticker and more difficult to handle, particularly when saturated.

3.2.4 Fill and Debris

A layer of miscellaneous fill and debris was found across the site ranging in thickness from one to eight feet. The material consists of a cobbly and bouldery gravel mixed with varying amounts of demolition debris from facility buildings and foundations. RMT attempted test pits within the footprint of Building 14 and encountered an intact concrete slab and footings beneath the fill material. The thickness of the slab is unknown, but anticipated to be non-reinforced, based on the apparent construction age of the building. The identification and location of the former building 14 basement slab and the surrounding rubble confirm the completion of the LEC building demolition plan as outlined in the letter dated December 11, 1991 from LEC to the NJDEP. This demolition plan was approved by the NJDEP, specifically the re-use of "ID-27 Rubble" as backfill for the building 14 foundation, in the NJDEP letter dated February 28, 1995.

3.3 Soil Excavation and Handling Limitations

The extreme coarse-grained nature of the soils encountered on this site will present some challenges to their excavatability and handling. Large construction equipment will be necessary to excavate and move most of the materials. There may be some larger boulders that will have to remain in place, but these should be encountered near the target depth of excavation. Because most ex-situ treatment methodologies cannot effectively handle or treat materials greater than three inches in diameter, an on-site screening unit may need to be used to pre-screen the soils prior to stockpiling for any on-site treatment. The same screening techniques would also be recommended to limit the volume and subsequent weight of any material scheduled for off-site management.

RMT estimates that the amount of material to be treated or handled in later steps could be reduced as much as 50 to 65 percent by screening out the course fraction greater than three inches in diameter. This screened coarse fraction would be returned directly to the excavation area. Inasmuch as the surface area of this coarser material is very low in comparison to its total volume, very little residual product would remain in or on the material returned to the excavation, negating the need to wash the material prior to backfilling.

The majority of the coarse-grained soils excavated from below the water table during test pit installations exhibited the capacity to drain rapidly. Therefore, it appears that gravitational dewatering of excavated soils and collection of any immiscible product would be most effectively accomplished within the zone of the excavation. In fact, it appears from RMT's observations that this approach may be the most effective way of promoting the release and collection of the vast majority of product currently held within the product contaminated zone.

3.4 Trench Stability

The coarse-grained nature of the soils provides for relatively stable sidewalls during excavation, although RMT observed some spalling of trench walls. Any extensive excavation of trenches below the water table, however, may require trench-wall stabilization. This does not apply to large areal excavations, except at the outer face of the excavation, and/or adjacent to structures or areas requiring protection. These situations will require adequate geotechnical engineering evaluation and design. Installation of sheeting in this material is impractical, and if, for any reason trenching shields were used, they would need to be of sufficient width to accommodate the larger excavation equipment.

3.5 Groundwater Observations

3.5.1 Groundwater Levels

Historic piezometric levels recorded by RMT and Weston over a period of ten years indicate that groundwater elevations fluctuate from four to five feet due to seasonal variations in recharge. Figure 6 presents a hydrogeologic profile along the same profile line as Figure 5. Groundwater levels reported in the *Quarterly Monitoring Report – 4th Quarter 2001* by RMT and field observations from test pits are all indicative of current drought conditions, which suggest groundwater levels are at or near their extreme low levels of 623 to 623.5 feet above mean sea level (msl). A seasonally high groundwater mound usually occurs east of Building 14 as a result of the presence of the finer-grained soil unit near the surface. This mound has been absent during the current drought conditions.

3.5.2 Groundwater Influx Rates

Due to local heterogeneity of the subsurface materials, it is RMT's opinion that localized testing of groundwater recovery at test pits and wells would not define the hydraulic conductivity to any more accurate range than has already been determined. Weston summarized detailed aquifer tests results in Table 32 of their report *Revised Remedial Investigation Findings*, dated June 1990.

Where test pits conducted in December 2001 penetrated the water table, the rate of groundwater influx was moderate to rapid (several GPM). This is consistent with the hydraulic conductivities reported by Weston that were in the range of 10^{-2} cm/sec. Current recharge potential is high due to the high hydraulic conductivity of the soils and the piezometric potentials from the upgradient Washington Forge Pond and the Rockaway River. Both of these surface-water bodies induce flow onto the site.

3.6 Evaluation of Groundwater Controls

The reduction of groundwater influx during excavation would require some physical means of reducing the recharge. Traditional groundwater control methods such as cutoff walls would be extremely difficult to install and be relatively ineffective. The presence of cobbles and boulders and the excessive depth (greater than 150 feet) to an impermeable layer would make installation of physical cutoffs such as sheet piling, slurry walls, grout curtains, cryogenic barriers or other technologies impractical. There appears to be no available technology to make reduction of groundwater influx feasible, therefore excavation methods that would minimize the volume of groundwater from entering the excavation would have to be established.

3.7 Evaluation of Groundwater Treatment

Should any volume of groundwater have to be removed from the subsurface during excavation, then treatment and disposition of that water has to be considered. RMT contacted the Rockaway Valley Regional Sewer Authority (RVRSA) (Ms. Jen Pien) and learned that their ordinance prohibits the discharge of groundwater, treated or otherwise, to their sewer piping system and subsequently their publicly-owned treatment works (POTW). NJDEP has agreed that NPDES permitting of surface-water discharges of treated groundwater to the Rockaway River would be very difficult to achieve, and that the process would take an excessive amount of time. Therefore, the only potentially feasible alternative would be to treat on site and haul to another facility, or haul contaminated water directly to a treatment facility. Neither of these alternatives would be practical, unless only small volumes of water are generated from controlled excavation operations.

3.8 Conclusions Regarding Excavation Decision-Tree Elements

In summary RMT concludes that the soils at the LEC site can be excavated and handled for ex-situ treatment with the following caveats and considerations:

- Heavy equipment will be required to handle the very coarse-grained material.
- Soils should not require excess stabilization during excavation.
- Screening of soils to reduce the volume to be treated is practical. Agency concurrence with soil screening and leaving screened material greater than 2.5 inches within the general excavation area without washing needs to be received.
- Soil materials encountered generally drain freely; therefore, drainage of soils within the excavation area can be done.
- Groundwater controls are not practical.
- On-site disposal of treated water is not possible.
- Any waters generated from soil excavation, handling and treatment need to be minimized.

Section 4
Free-Product Source Delineation and Evaluation

To evaluate the nature and distribution of the immiscible product, RMT combined the field and laboratory observations from test pit excavations with previous data derived from earlier Weston and RMT investigations, and from free-product recovery efforts. Delineation of the probable extent of residual- and free-product volumes is important to evaluation of the needs for and costs of excavation and treatment.

4.1 Field Identification of Free Product Occurrence

RMT encountered free immiscible product at all three primary test pits. At TP-1 we found free product saturated soil at a depth of 11 feet below ground surface (BGS) with free-flowing product at a depth of 12 feet BGS. We identified flowing free-product and water at a depth of 11.5 feet BGS at TP-2. Water and free product flowed at a depth of 11 feet BGS at TP-3. RMT also identified evidence of free-flowing product at supplemental test pits TP-6, TP-10, TP-16 and TP-17. Many other test pits showed product staining of soils, strong odors and elevated PID readings (see Appendix C).

4.2 Horizontal Distribution of Free- and Residual-Product

Combining the evidence from these field investigations with laboratory results from soil borings and previous test pits, observations from other subsurface investigations and results of EFR efforts and monitoring, RMT prepared a map to project the probable areal distribution of immiscible fluids (Figure 7). Four concentric zones of probability of immiscible product occurrence illustrate this delineation. Not all locations will exhibit the described properties, but sufficient evidence exists to place probabilistic bounds on the extent of residual or potential free product present.

4.2.1 Zone 1 – Trace Presence of Product

Within this relatively continuous zone solvent odors are evident within the soil units. When water is encountered, it is often accompanied by a sheen. This zone of soils probably represents less than one percent of the total volume of residual product remaining in the source area.

4.2.2 Zone 2 – Residual Soil Smear Zone

Within this relatively continuous zone staining of the soil, usually silvery gray in color, is frequently encountered at depth immediately above the water table. Strong solvent odors and sheen on the water are usually present. This zone generally suggests that residual product contamination adsorbed to the soil surface and pores is present, but not in saturated or free-flowing conditions. RMT estimates this zone of soils to contain about five percent of the total product volume present in the source area.

4.2.3 Zone 3 – Pockets of Product

These zone areas are similar to Zone 2, but occasional discontinuous pockets of free-flowing product are also common. The pockets are probably related to heterogeneities in the soil matrix such as silt and clay lenses. Zone 3 soils may account for as much as 30 percent of the product volume in the source area.

4.2.4 Zone 4 – Free-Product Zone

In these zone areas interception of free-flowing product is highly probable. The western two Zone 4 areas compare well with the occurrence of thick free-product in the EFR wells as reported in *Quarterly Monitoring Reports*. All three Zone 4 areas correspond well with the delineation of free-product predicted by free-product modeling performed in 2000 by RMT and reported in *Free Product Volume Analysis* in May 2000 (see Figure 8). Soils in this zone may account for 60 to 70 percent of the residual and free product volume in the source area.

4.3 Vertical Delineation of Free and Residual Product

As the free product involved at the LEC site consists of varying mixtures of light non-aqueous phase liquids (LNAPLs), the vertical extent of free and residual product should not extend below the lowest recorded groundwater elevation. Given the estimated residual quantities of product, free-flowing product should occur as thin perched pools on top of low permeability soil zones and as thin floating layers on the water-table surface. Figure 9 presents a conceptual vertical profile of the potential occurrence of free and residual product. The actual zone of flowing free product encountered during on-site excavation activities will depend on the elevation of the water table at that time, and the length of time the free product has had to equilibrate with the water. This residual product or "smear zone" soils should be no more than five feet thick, except in areas where product was released closer to the surface.

4.4 Explanation of Source Geometry

The "hot spots" exhibited by the three Zone 4 areas on Figure 7 appear to be directly related to facility operations. The central hot spot coincides with the location of known bulk storage of process-related material and associated piping connecting the former aboveground storage tank (AST) area with the former operations within Building 14. The linearity of the contaminated zone is obvious and it is not coincidental that the axis of linearity exhibited by the line of profile A-A′ parallels the general groundwater flow direction across this portion of the site. This geometry may also be affected by groundwater gradients exerted from higher hydraulic pressure heads to the north and those exerted by the losing reach of the Rockaway River to the south. These would have a tendency to "squeeze" the immiscible product and keep it from migrating transversely to the north or south.

4.5 Product Characterization

An understanding of the characteristics of the free-product is necessary to evaluate potential product removal as well as treatment technologies.

4.5.1 Chemical Characterization

RMT obtained samples of product contaminated soil from TP-1, TP-2 and TP-3 and submitted the soils to STL for analysis of VOCs, SVOCs, RCRA Metals, and PCBs. Analytical results are presented in Appendix F. A summary of the organic contaminants identified is presented in Table 6. As expected, the primary constituents identified in the soils were ethylbenzene, xylenes and DEHP, with DEHP being the dominant residual contaminant. Analyses from other investigations suggest the primary liquid product is dominated by xylenes.

Based on the distribution of contaminants in the soil, as evaluated from these results and previous results by Weston, it is RMT's opinion that much of the migration of DEHP has been driven by solubilization into the xylenes and ethylbenzene. These lighter constituents degrade and volatilize readily, leaving the stickier DEHP as the primary residual contaminant in the soils. Contamination to be handled therefore appears to be soils saturated with free product dominated by xylenes, and residual soil contamination dominated by DEHP.

4.5.2 Physical Characterization

Saybolt Laboratories (Saybolt), who conducted physical analysis of product samples from three different locations on the site in support of RMT's 2000 free-product modeling, reported fluid densities ranging from 0.91 to 0.95. These densities are indicative of LNAPLs and are significantly lighter than raw DEHP which has a density of 0.985.

Saybolt also reported viscosities ranging from approximately 2 to 10 centipoise at 100° F, depending on sampling location. These viscosity values would be higher at ambient ground temperatures. RMT did not visually observe any differences in viscosity of flowing free product in the test pits, although significant variations may exist. It is anticipated, however, that interference of free-product flow and gravity recovery efforts would also be caused by heterogeneities of the soil matrix.

A flashpoint of 62° F was determined for a product sample obtained during recent lead contamination investigations. DEHP has a flashpoint of 384° F. Flashpoints ranging from 59° F to 81° F should be expected based on the apparent ethylbenzene and xylene contents of the free product. These low values suggest that an added level of health and safety related precaution will have to be made during excavation if significant quantities of product are released.

The physical properties of viscosity, specific gravity and flashpoint all suggest that the recoverable free-product volume is predominantly made up of the xylene and ethylbenzene components, while the non-recoverable volume is predominantly made up of DEHP.

4.5.3 Literature Search on Product Properties

Rather than to immediately commit to collection of free-product samples for additional laboratories tests of physical properties, RMT believed that a literature search on the known contaminants making up the product would provide an initial basis on which to screen other *in situ* and ex-situ treatment technologies, should their evaluation become necessary. This information might also provide the basis for input data into any future numerical modeling of contaminant transport, degradation and natural attenuation.

Table 7 summarizes some of the more important parameters for ethylbenzene, xylene and DEHP. The similarity of the properties of the less dense ethylbenzene and xylene compounds contrasts sharply with those for DEHP. The DEHP has a slight odor, higher density and much lower water solubility and vapor pressure than the other compounds. The much larger molecule accounts for these properties and results in a much more "sticky" material with a low potential for migration in the soil.

Inasmuch as *in situ* and ex-situ thermal technologies might be options to enhance release of the product from the soil, evaluation of thermal effects on viscosity and vapor pressure might be warranted. RMT found published laboratory data on temperature-viscosity and temperature-vapor pressure relationships for the three contaminants of concern. Curves showing these relationships are presented in Appendix G.

Initial evaluation of these temperature-dependent relationships indicates that *in situ* thermal heating might enhance mobility and recovery of the fluid product through reduction in viscosity. However, the thermal energy demands would be impracticably high due to the potential groundwater flux in this hydrogeologic system. Soil heating with vapor extraction might also be effective for the removal of the xylene and ethylbenzene from the vadose zone because of the increased vapor pressures. However, the temperatures involved in *in situ* thermal augmentation would be too low to enhance vapor removal of the DEHP from the vadose zone.

4.6 Conclusions and Recommendations Regarding Free-Product Source Removal and Potential Treatment

Regardless of source of the free product, the vertical and horizontal geometry is consistent with natural conditions at the site and helps to provide a basis upon which to execute excavation of product impacted soils. RMT is confident that the vast majority of residual product is accounted for within Zones 3 and 4 as presented in Figures 7 and 9. Assuming agency approval of wet excavation to remove the product source, RMT recommends that excavation limits be established as shown on Figure 10. These limits encompass Zones 3 and 4 and provide a contiguous area in which to stage excavation operations.

While excavation of the source appears to provide the simplest and most cost-effective method of permanently removing the source of potential groundwater contamination at the LEC site, this conclusion is predicated on the assumption that treatment and/or disposition of the contaminated soils will also be cost effective and implementable. Ex-situ thermal desorption technologies, while they appear to be technically feasible, have severe material handling limitations due to the nature of the materials encountered. In addition, constraints due to public perception of the technology and air permitting needs would make the technology difficult to implement. Further analysis by RMT indicates that off-site disposal of the contaminated soils as a non-hazardous material would be the most cost-effective material handling and disposition option.

The recommended path forward for source removal is, therefore, wet excavation with off-site disposal of product-contaminated soils as a non-hazardous material. Free-product drained on-site from the soils would be collected and handled separately as an F003 liquid hazardous waste. Should this scenario not prove acceptable, further analysis of technologies using the data gathered to date as well as bench-scale testing will be necessary. Section 5 presents details on the approach to excavation and material handling of this recommended path forward, while Section 6 addresses the classification and disposition of excavated materials.

Section 5
Proposed Approach to Soil Removal

This proposed construction means and methods described in this section are intended to remove contaminated soil and free product trapped within the soil matrix. Based upon observations made by RMT staff Geologists and Construction Managers during test pit excavation on site in November and December of 2001 it is RMT's belief that this is the most efficient and expedient method of source reduction. The following outlines the recommended approach to carrying out the proposed soils excavation.

5.1 Final Remedial Action Planning and Design

Upon approval of this conceptual approach, RMT will prepare a Remedial Action Plan (RAP) presenting the detailed designs and specifications for soil excavation. The RAP will include preparation of a site-specific Health and Safety Plan and an Erosion and Sedimentation Control Plan to control excavated and stockpiled material from entering the Rockaway River. Other ARARs will be addressed to assure that the project can more forward in a timely manner. Once final agency approval of all plans is received, site mobilization will commence.

5.2 Mobilization and Site Set-Up

RMT, Inc. will mobilize the supervision, manpower and equipment necessary to implement the approach outlined in both this report and the future RAP. Mobilization activities will involve establishing a field office in the existing building on the West Side of the site and setting up a personnel decontamination trailer in the support zone. Other activities will include installing silt fence around the perimeter of the site, clearing & grubbing the brush and trees within the limits of construction, and surveying the site. An equipment decontamination pad will be built next to the entrance gate on the West Side of the site. The pad will be twenty-five (25) feet long by fifteen (15) feet wide and be constructed from 6-inches of concrete. A truck scale will also be installed adjacent to the west entrance gate.

A gravel haul road will be constructed across the railroad right of way and into the site. A short haul road and turnaround area will be constructed along the southern edge of the site. This road and turnaround will be used for the truck traffic that will haul materials off-site.

5.3 Health and Safety

Due to the potential for encountering organic saturated soils and/or free product, RMT will set-up a health and safety program that is intended to protect on-site field personnel as well as the surrounding population. This program will involve monitoring the exclusion and contaminant reduction zones for total organics and particulates, in addition to some perimeter area sampling. Action levels will be established in the site-specific health and safety plan.

A designated Health and Safety Officer will be on-site during all site activities. If action levels are reached, counter measures will be implemented, these include watering haul roads or the active excavation, covering stockpiles with plastic, applying vapor suppressing foam, upgrading the level of respiratory protection or other measures as deemed appropriate by the health and safety officer and site manager.

5.4 Categorization of Soil and Waste to be Excavated

Most of the on-site soil and waste to be excavated has been grouped into four categories: A, B, C and D. The vertical and horizontal extent of these soils proposed to be excavated is delineated on Figures 11 and 12, respectively. The nature and handling of Category A, B, C, and D Soils are discussed in detail in Subsections 5.5 through 5.8 below. Additional categories of soil and waste are discussed in Section 6.

5.5 Excavation and Handling of Category A Soil

Category A soil is defined as non-hazardous overburden soil, fill and debris from the excavation area with a lead concentration greater than 600 ppm but not considered hazardous for lead. It will generally be found on the surface of the site to a depth of four to five feet below the ground surface. Category A material will include the ID-27 debris generated as a result of Buildings 13 and 14 demolition activities, the 20,000 square foot former Building 14 foundation and slab, and the 5,000 square foot slab believed to exist within the former above-ground storage tank (AST) area. Category A soil will be stockpiled on-site and reused as sub-grade fill material.

This material will be stripped first and stockpiled on the northern portion of the site, in the area between the drainage channel and the railroad right of way. An excavator will be used to remove the material and load it into an articulated dump truck. The dump truck will deliver the material to the area where a bulldozer will push the material into a stockpile. The soil will remain in the stockpile until it can be used for backfill a minimum of two feet below the ground surface.

The concrete slabs from Building 14 and the AST area will be broken up with an excavator equipped with an impact hammer. The pieces will be loaded with the excavator and delivered to the Category A stockpile area. The broken up concrete will also be used as backfill a minimum of two feet below ground surface.

5.6 Excavation and Handling Category B Soil

Category B soil is defined as hazardous paint sludge, multi-colored to tan process waste material and associated soils. Category B material will include the waste stream located near a former infiltration gallery (adjacent to the former AST area) and in the area of the old piping gallery (between the AST area and Building 14 slab).

When this material is encountered it will be excavated and hauled to a stockpile area located on the southern end of the site (just outside of the limits of construction near the "production well" identified on the drawings). The material will be placed on plastic to prevent cross contamination with the underlying soil.

Odor or organic releases generated from this material will be controlled through the use of plastic sheeting and/or foam (ACS645). This material will be scheduled for off-site treatment and disposal as soon as possible. If practical, instead of stockpiling this material, the material may be excavated and direct loaded into transportation vehicles or roll-off boxes.

5.7 Excavation and Handling of Category C Soil

Category C soil is defined as non-hazardous soils with lead concentrations less than 600 ppm. It is material that will be excavated outside of the lead soil contaminated zone in order to exposed the underlying free product smear zone soils. This material will be excavated and stockpiled adjacent to the Category A soils on the northern end of the site. The soil will remain in the stockpile until it can be used for backfill a minimum of two feet below the ground surface.

An excavator will be used to remove the material and load it into an articulated dump truck. The dump truck will deliver the material to the stockpile area where a bulldozer will push it into a stockpile.

5.8 Excavation and Handling of Category D Soil

Category D soil is soil found within the free-product and product smear zone. The Category D soil proposed for excavation is from the top of the product smear zone to a depth at, or below, the water table where product may be present due to historically low water-table elevation. The material above the smear zone, as previously noted, will first be excavated, screened, stockpiled and hauled off-site for disposal as non-hazardous industrial waste.

At this juncture it is believed that this material contains a large amount of cobbles and boulders. In an effort to reduce the overall tonnage of material shipped off-site, a vibrating flat bar screen will be used screen the material to 2.5 or 3 inch minus.

An excavator will be used to remove the material from the excavation. The material will be hauled to a screening area located on the West Side of the site, within the limits of construction. The material will be dumped and run through a screen. A second excavator will load the material onto the screen. Soil passing through the screen will fall onto a conveyor, which will stockpile the material adjacent to the screen. The debris, rock and boulders will fall off the side of the screen. A front-end loader will carry the oversized material to either a completed section of the excavation for backfill or to the stockpile area located on the north end of the site for future use as backfill. The excavator or front-end loader will load the screened soil into transportation vehicles for off-site disposal.

Category D soils will be excavated to a depth no greater than two feet below the water table. Figure 13 presents a schematic of the excavation plan and sequence. Excavation will be accomplished by first establishing a trench up to two feet below the water table along the working face of the excavation area. Once a sufficient area of water is exposed in the trench an absorbent or floating barrier boom or similar device will be placed at the outer edge of the trench. Excavated materials will be place on top of surfaces to be excavated later and in a row parallel to the side of the trench opposite the barrier boom. This will allow the excavated material to drain of excess, water and free product. The boom will protect areas not to be excavated from cross- contamination.

Once the soil has drained of free liquid it will be loaded and handled the same as non-saturated Category D soils. Soils they lay beneath the area where previous soils were drained will then be excavated and placed in the next adjoining row. Once sufficient surface area has been exposed, the barrier-boom will be move toward the direction of excavation. Then, backfill materials will be placed between the boom and the areas excavated during the first part of the sequence in the direction of excavation. Removal, draining and hauling of soils will continue to completion using this cut and fill sequence.

If required, RMT will augment the natural drainage of this material with an appropriate matrix (*i.e.*, Portland cement, cement kiln dust) to ensure there is less than 1% free liquids exist prior to characterization and subsequent transportation to the disposal facility.

5.9 Backfilling and Site Restoration

The remainder of the excavation area will be backfilled once the contaminated soils have been removed from the site. The Category A & C soils, and the overburden generated from the screening of Category D soils will be used as backfill. This material will be placed a minimum of two (2) feet below ground surface. Additional material required for backfill will be imported from off site. The backfill will be placed in lifts and tracked into place with a bulldozer. Once the site has been backfilled, it will be covered with six (6) inches of imported topsoil. The site will then be graded and seeded.

Section 6
Soil Classification and Disposition

6.1 Wet Excavation Area Designation

In a February 11, 2002 letter (see Appendix H, Letter 1), RMT requested NJDEP to designate a proposed wet excavation work area and agree that activities within the area do not require Resource Conservation and Recovery Act (RCRA) permitting. As a result, the point of generation for any waste from this delineation would be when it is removed from the area and placed in containers. Construction activities discussed in Section 6 would not trigger RCRA requirements since the point of generation of any waste from this area is when it is removed from the wet-excavation area delineation. Therefore, staging smear zone soil piles to dewater liquids, removing immiscible product using skimmer pumps or absorbent pads, and adding absorbent, stabilization, or solidification material to draw off any remaining free liquids from soils would not be RCRA treatment.

NJDEP was requested to approve and designate the wet-excavation area, which is an example of an Area of Contamination (AOC) and apply the Area of Contamination Policy (reference AOC Policy articulated in 53 FR 8758-60, dated March 8, 1990). EPA interprets RCRA to allow certain discrete areas to be considered RCRA units so consolidating or treating waste inside the unit does not trigger Land Disposal Restrictions (LDRs). After the waste is removed from the AOC and put into a container, the waste is generated and characterization is done at that point. A wet-excavation area will be made to dewater the soil and to separate the free product from the water table. Source zone materials within the residual- and free-product zone may be staged in a manner that allows soil piles to dewater with the liquids flowing back into the excavation. "Active Management" or "Treatment" such as draining the free liquids or adding absorbent can be done and does not require a RCRA permitting or a petition equivalency by NJDEP because the point of generation for any waste (free-product, contaminated soil, etc.) occurs when this material is removed from the excavation area and loaded into containers. NJDEP is the regulating agency with authority to designate an AOC.

6.2 Classification of Materials from Excavation Activities

Table 8 outlines all the materials anticipated to be handled during the excavation activities at the site. This table of materials summarizes a description of each material, its waste classification, approximate quantity, and disposition. The February 11, 2002 letter discussed in the previous section also requested NJDEP to review and concur with waste classifications for the free-product layer, free-product smear zone soil, and absorbent pads containing free-product material. RMT provided a regulatory determination on these wastestreams because of strong convictions that the historical Roy F. Weston, Inc. (Weston) characterizations (specifically the free product layer – D001, F003, F005) are not consistent with RMT's understanding of historical operations and current RCRA regulation. The characterization of the free-product directly affects the future waste characterization of the free-product smear zone soils, the absorbent pads containing free-product material, and potentially the construction debris "cleaning" residual wastestreams. RMT presented a determination that the F005 listing is not valid based on the F005 definition, and that D001 was misappropriately applied when F003 addresses the characteristic of ignitability and its' treatment standard. A letter from NJDEP received by facsimile on February 22, 2002 stated additional information was needed to address the determination request. Due to timing of this letter with preparing this report, this section and referenced appendices provide the additional information requested by NJDEP, along with a summary of the regulatory determination for these specific waste streams. This section also provides summaries of additional materials not addressed in the February 11, 2002 RMT letter but anticipated to be generated during excavation activities. Material categories will be discussed in the order they are presented in Table 8.

6.2.1 Category A - Overburden Soil, Fill and Debris from Excavation Area

This overburden material is from the lead soil contaminant zone above part of the free-product smear zone. Material Category A consists of soil, debris and fill materials with lead concentrations greater than 600 mg/kg but not considered hazardous for lead based on the results from Synthetic Precipitation Leaching Procedure (SPLP) analyses conducted during the lead delineation work in November 2001. Analytical results show this material does not leach appreciable lead (as shown by a combination of SPLP analysis, and low to non-detect total lead concentrations in free product and shallow groundwater). However, this material may pose potential inhalation and ingestion risks. RMT proposes using this material as sub-surface backfill for the excavation area. There are approximately 7,700 cubic yards of this material that including ID-27 debris generated from Building 13 and 14 demolition activities. The non-hazardous ID-27 demolition debris classification has been acknowledged by NJDEP in letters between NJDEP and Weston dated February 28, 1995 and August 9, 1995 (Ref. Appendix H, Letters 2, 3, and 4).

6.2.2 Category B - Paint Sludge/Multi-Colored to Tan Process Waste Material and Associated Soils

This waste stream consists of potentially 200 to 1,000 cubic yards is a brightly multi-colored to tan colored paint sludge/putty and contaminated soil discovered during December 2001 fieldwork activities in and around the former infiltration gallery between the former AST area and the former Building 14. Identified as Material Category B, analytical results shows this process waste as characteristically hazardous for lead (D008) and cadmium (D006) only, although detection levels of various organic solvents were noted (see Appendix I). No listed hazardous wastes were determined to be associated with this waste stream. Once excavated, this waste will be managed as a hazardous waste and shipped off-site to a permitted hazardous waste Treatment, Storage, and Disposal Facility (TSDF).

6.2.3 Category C - Upper-Layer Soils, Fill, and Debris

This overburden material is outside and adjacent to the lead soil contaminant zone and above part of the Free-product smear zone. Material Category C consists of soil, debris and fill materials with lead concentrations less than 600 mg/kg. This material poses little potential inhalation, ingestion and/or groundwater risk, and would be used either as surface or sub-surface fill material in the wet-excavation area. There are approximately 4,000 cubic yards of this material. This volume includes miscellaneous debris and fill.

6.2.4 Category D - Free-Product Smear Zone Soil

Once screened, RMT anticipates approximately 4,200 cubic yards of soils removed from the excavation that was in contact with the Free-product layer will require appropriate management. Excavation activities will be performed in a manner that will allow the soil piles to dewater, with the liquids flowing back into the excavation. As outlined in section 6.2.6, these liquids will be captured and managed accordingly. It is our intent not to have any free liquid in this soil. The soil will be loaded into containers where it becomes a generated waste. The soil will be sampled for RCRA characterization purposes and to meet NJDEP sampling requirements for characterization. Since this soil waste will not be a liquid, it will not meet the characteristic of ignitability. The Free-product smear zone soil waste characterization is dependent on the outcome of the characterization of the Free-product layer discussed further in Section 6.2.6. No soil sample was obtained during the November and December 2001 fieldwork activities. Based on our waste characterization determination presented in the RMT February 11, 2002 letter, this wastestream should be non-hazardous and would be sent to a non-hazardous industrial waste disposal facility for disposal.

6.2.5 Category E - Copper Contaminated Soil

This material is green-colored waste soil and sludge discovered between Building #12 (old powerhouse) and the penstock outlet on the Rockaway River. There are approximately 100 cubic yards of this green-colored soil. The color is potentially attributed to a high concentration of copper (137 mg/L). Analytical results for RCRA metals, VOCs, SVOCs, and PCBs reported no detections except for lead at 0.7 mg/L, well below TCLP levels. Analytical results are in Appendix I. Proposed disposition is to remove the soil and send it off-site for disposal as a non-hazardous waste.

6.2.6 Category F - Free-Product Layer – Liquid

RMT estimates approximately 25,000 gallons of free product/groundwater ("emulsion") will be recovered from the wet-excavation area activities. Approximately 4,700–9,700 gallons of this volume is free phase product based on the anticipated volumes outlined in the *Free Product Volume Analysis* (RMT, May 2000) (8,000 to 13,000 gallons) minus the recovered free product volume to date (3,300 gallons). This emulsion will be managed as a hazardous waste and sent off-site for treatment and disposal once it is removed from the wet-excavation area and placed in an appropriate tank or container. RMT provided a regulatory determination in the February 11, 2002 letter to NJDEP (Appendix H, Letter 1) detailing a waste characterization of F003 only by presenting an argument that the wastestream had been incorrectly characterized as a D001/F003/F005 liquid waste by Weston. RMT feels that this historical characterization is not consistent with both historical site operations and current RCRA regulation. NJDEP sent a response letter by facsimile on February 22, 2002 stating the waste characterization is currently under review by the Bureau of Resource Recovery and Technical Services within NJDEP. The NJDEP letter required all information related to Weston's initial characterization of the waste with D001, F003/F005 and the results from RMT's recent analyses of the waste be submitted for NJDEP to complete its review. The analytical results are presented in Appendix I, along with test pit sample results for the Free-product layer found in Appendix F.

Weston Characterization Information Request by NJDEP

With regards to Weston's initial characterization, RMT has not found any pertinent information regarding a waste profile analysis by Weston that documents organic chemicals/wastes used at the facility and their usage (*i.e.*, as a solvent, as an ingredient, tank spill, etc.) or explains the thought process surrounding Weston's historical characterization. RMT provides the following summary points from the *Weston Feasibility Study*, dated October 1993 and RMT assessments in brackets "[ ]" below to supplement our February 11, 2002 letter:

- Section 1.4: A soil gas survey during the Remedial Investigation (RI) indicated a presence of ethyl benzene, xylene, toluene, and naphtha-related compounds in several areas on site. [Toluene is the only F005 constituent listed and only a waste if it is a spent solvent used for its solvent purposes. The report also doesn't indicate what soil sampling found regarding toluene concentrations in soil and groundwater where xylene, ethyl benzene, methylene chloride and benzene were discussed.]

- Section 1.4: The soil investigation noted volatile organic compound (VOC) contamination as primarily ethyl benzene and xylene. [There is no mention of toluene or any other F005 solvent.]
- Section 1.6.2: Benzene was detected in 6 of 97 soil samples but the arithmetic average concentration of benzene was below the NJDEP Nonresidential Soil Cleanup Standard ... and remediation of benzene was not required. [Benzene is a F005 waste if a spent solvent used for its solvent purposes.]
- Section 1.6.6: Xylene, ethyl benzene, and methylene chloride were noted for their detection in groundwater samples and exceeding NJDEP Groundwater Quality Criteria. [There is no mention of toluene or any other F005 solvent detected and tracked in this FS.]
- Section 3.2: Weston notes the primary dissolved groundwater contaminants are DEHP, xylene, and ethyl benzene. [There is no mention of toluene or any other F005 solvent detected and tracked in this FS.]
- Tables 1-5 & 5-1: Table 1-5 lists DEHP, xylenes, and ethyl benzene as organic media specific contaminants of concern. Table 5-1 specifically lists DEHP, xylenes and ethyl benzene concentrations in their initial treatment influent concentration estimate product recovery and containment case. [Although nontarget base neutral (BN) and nontarget volatile organic (VO) values are listed in Table 5-1, RMT presumes that if toluene or any other potential F005 organic was confirmed as a spent solvent used for its solvent purposes, Weston would have specifically listed and tracked these as constituents of concern, their concentrations, and proposed their cleanup criteria. RMT does not have the analytical data to confirm the presence or absence of toluene concentrations in these groundwater samples. However the presence of toluene does not confirm that toluene was a spent solvent used for solvent purposes.]

This is the entirety of the Weston waste characterization information in RMT's possession. RMT has other documents such as waste manifests that confirm Weston's characterization of the free-product layer as D001, F003 & F005 but these documents do not provide the determination to show that any F005 constituent was a spent solvent used for its solvent purposes. In the RMT February 11, 2002 waste characterization letter, RMT presented information that toluene and methyl isobutyl ketone use at the facility could have been either as an ingredient or for solvent purposes. RMT does know their storage location was not at Building #14 or the former AST area, and their use as a solvent is in printing designs, performed in another building, and not with the lamination and coating process that occurred in Building #14. Toluene could have been used either as a solvent or as an ingredient, depending where in the process it was used.

RMT has made a good faith effort in assessing the validity of an F005 waste characterization and has requested NJDEP for any documents they may have that addresses the F005 determination but none have been provided. Also note in Section 4.5 of this report that the Free-product layer continues to be mainly xylene, ethyl benzene and DEHP. None of RMT's recent analytical results (see Appendices F & I) show detections of toluene or methyl isobutyl ketone. Finally, RMT requests NJDEP to review Appendix H, letters 2, 3, and 4, which outline Weston and NJDEP's correspondence regarding the characterization of a waste soil by analyzing the RCRA characteristics. Given the elapsed time (operations from 1943-1987), the limited documentation (Weston characterization) and process knowledge (building flow diagrams, detailed process information) of the former L. E. Carpenter facility, there is significant uncertainty of the source material usage, and ultimately in the F005 classification.

RMT also presented a regulatory analysis to remove the D001 code from the free-product layer wastestream because F003 provides the treatment standard to address the characteristic of ignitability. Since both D001 and F003 address the characteristic of ignitability, the F003 treatment standard is used per 40 CFR 268.9 (b) and the waste characterization should only be F003. A supporting EPA interpretation of this regulatory determination, dated March 4, 1994, is presented in Appendix H, Letter 5.

6.2.7 Category G - Absorbent Pads Containing Free-Product Material

About 2-10 cubic yards of absorbent pads and material may be generated from activities to reduce the immiscible Free-product layer left in the exposed excavation once initial pumping and skimming efforts are completed. Hydrophobic absorbent pads, socks, or similar materials may be used to attract the residual- and Free-product layer on the water table. The absorbent pads will be loaded into containers with additional absorbent material to eliminate remaining free liquids. Once the drum is filled, it will be moved from the excavation area and becomes a generated waste. A representative sample will be obtained and analyzed for RCRA characterization purposes and to meet NJDEP sampling requirements for characterization. Current plans are for this future wastestream to contain no free liquids and the waste would not meet the characteristic of ignitability. If free liquids remain, a sample will be run for flashpoint. The absorbent pads containing Free-product material characterization is dependent on the outcome of the characterization of the Free-product layer discussed further in Section 6.2.6. This is an expected future waste so no analytical data is available. Based on our waste characterization determination presented in the RMT February 11, 2002 letter, this wastestream should be non-hazardous and would be sent to a non-hazardous industrial waste disposal facility, unless sample results show hazardous characteristics.

6.2.8 Category H - Miscellaneous Construction Debris

Material Category H on Table 8 refers to miscellaneous construction debris consisting of piping, mason blocks, concrete slabs, etc. This material will not be used as fill material in the excavation once activities are complete. Approximately 100 to 300 cubic yards of this construction debris may be generated. This includes construction debris removed from other parts of the property or inappropriate fill material (piping, rebar, etc.) that will be classified as ID-27 Rubble and taken to an off-site construction debris landfill. As in Material Category A discussed in Section 6.2.1, the non-hazardous ID-27 demolition debris classification has been acknowledged by NJDEP in letters between NJDEP and Weston dated February 28, 1995 and August 9, 1995 (see Appendix H, Letters 2, 3, and 4).

6.2.9 Category I - Construction Debris "Cleaning" Residual

A visual inspection of concrete and demolition debris may cause some of the materials to be subject to cleaning either by scraping or by high-pressure washing. Similarly, excavation equipment will undergo decontamination as they complete their tasks. An area would be set up with proper equipment and capture methods to catch the wash water for characterization and management. For planning purposes, RMT assumed 2,000 gallons of generated hazardous wash water will be generated, however; this volume may likely change with field conditions. Once generated, representative samples of this future waste will be obtained and analyzed for RCRA characterization purposes and to meet NJDEP sampling requirements for characterization. This waste is expected to be managed in containers and sent off-site as a hazardous waste for treatment and disposal.

6.2.10 Category J - PCB Soils

The final material category discussed in this report is approximately 900 cubic yards of PCB impacted soils. These soils cover 11,850 square feet on the Wharton enterprise property and contain PCB concentrations greater than the site cleanup criteria of 2 ppm. This investigation and subsequent remedial volume are documented in the Weston *Workplan for Phase I ROD Implementation*, dated October 1994. The remedial volume assumes excavation to the static water table estimated for this area at 2 ft bgs. Representative samples of this soil will be obtained and analyzed for characterization purposes and to meet NJDEP sampling requirements for characterization. Based on the results of PCB testing performed in 1993 by Weston, this material is not anticipated to be a Toxic Substance Control Act (TSCA) waste. RMT assumes this soil will be non-hazardous but characterization will occur at the time of generation.

Section 7
Summary of Conclusions and Recommendations

7.1 Conclusions

The primary objective of this investigative effort was to arrive at a feasible remediation strategy to reduce the volume of free product at the LEC site. Accomplishment of this objective required an understanding of the nature and extent of the soil contaminated with free product; whether or not that soil can be effectively removed to be treated ex situ; what the physical and chemical characteristics are that will affect potential remedial technologies; and what may be the potential off-site disposition of excavated soils and waste material generated from site excavation activities. While the focus of this investigative effort was on excavatability and on-site soil treatment, RMT gathered sufficient samples and data to perform other analyses necessary to develop alternative remediation strategies, should excavation and on-site LTTD prove infeasible. The major conclusions arrived at regarding soil excavatability, nature of the free-product source, and source treatment and disposition are:

7.1.1 Soil Excavation

- Soils encountered were very coarse grained but are excavatable with larger equipment.
- Excavated soils will require screening of material greater than 3 inches to reduce the difficulty in handling cobbles and boulders and to minimize the volume/weight of soils to be treated and/or disposed.
- Installation of groundwater controls to aid in excavation of soils beneath the water table are not practical, due to the high hydraulic conductivity, large projected volumes of water that would have to be treated, and lack of a feasible treated groundwater disposal option.
- Excavation of soils beneath the water table will be performed without dewatering.

7.1.2 Free-Product Source Characterization

- Evaluation of test pit information along with results from previous investigations and source modeling have provided a conceptual model of the free-product source zone and it's delineation sufficient to develop a pre-design for a remedial action plan for the site.
- Evaluation of free-product source materials confirms that the primary constituent of concern are xylenes, ethylbenzene, and DEHP, with xylenes constituting the majority of recoverable or flowing product, and DEHP constituting the majority of the residual product retained within the soil pores.

7.1.3 Soil /Waste Treatment and Disposition

- Evaluation of existing treatment technologies indicates that LTTD would be difficult to implement due to material handling limitations, public perception and permitting issues.
- Similar limitations were identified for other potential on-site, ex-situ treatment technologies, such as soil washing, due to soil handling difficulties and process water requirements.
- RMT's evaluation concluded that product contaminated soil could be disposed of off site as a non-hazardous waste.
- It was determined that recoverable free-product and process wastes would have to be handled and disposed of as hazardous wastes.

7.2 Recommendations

Based on these findings RMT recommends the preferred, most expeditious, and most cost-effective remediation strategy to consist of (1) wet excavation of free-product impacted soils within the excavation limits identified in this report and (2) disposal of the minus 3-inch diameter product-impacted soil fraction at an off-site non-hazardous waste disposal facility. Specific elements of this proposed approach to reduction of the free-product volume include:

- Stockpiling, and reuse as backfill, materials in Category A and C as outlined in this report
- Removal and off-site disposal of highly contaminated materials described as Category B soils
- Wet excavation and draining within the excavation of free-product contaminated and water-saturated soils
- If applicable, augmentation of Category D drained soils within the boundaries of the wet excavation with an appropriate matrix to remove free liquids to less than 1% by volume. This process would be performed prior to characterization.
- Collection of immiscible free-product and off-site disposal as a hazardous material
- Screening of free-product contaminated soils to separate the minus 3-inch fraction for off-site disposal as a non-hazardous material
- Reuse of the plus 3-inch fraction as backfill
- Regrading of the site with placement of a vegetative support layer

Carrying this preferred strategy forward is dependent on approval of the above-listed elements of the approach. Major changes in excavation methods and needs, or soil and waste characterization could significantly affect the selection and implementation of an alternative source reduction strategy.

Tables

Table 1
Geotechnical Samples (1)

TEST PIT NUMBER	SAMPLE NUMBER	DEPTH (FEET BGS)
TP-1	GT-1-1	1 – 2
TP-1	GT-1-2	3 – 6
TP-1	GT-1-3	8 – 9
TP-2	GT-2-1	2 – 4
TP-2	GT-2-2	8 – 10
TP-2	GT-2-3	10 – 11
TP-3	GT-3-1	1.5 – 2
TP-3	GT-3-2	5 – 6
TP-3	GT-3-3	8 – 8.5

(1) Samples sent to RMT Soil Laboratory in Madison, Wisconsin

Table 2
Pre-Treatment Baseline Metal Samples [1]

TEST PIT NUMBER	SAMPLE NUMBER	DEPTH (FEET BGS)
TP-1	SM-1-1	1 – 2
TP-1	SM-1-2	3 – 6
TP-1	SM-1-3	8 – 9
TP-2	SM-2-1	2 – 4
TP-2	SM-2-2	8 – 10
TP-2	SM-2-3	10 – 11
TP-3	SM-3-1	1 – 1.3
TP-3	SM-3-2	2 – 2.3
TP-3	SM-3-3	11 – 12

(1) Samples held by RMT pending need for pre-treatment analysis

Table 3
Product Zone Characterization Samples [1]

TEST PIT NUMBER	SAMPLE NUMBER	DEPTH (FEET BGS)
TP-1	P1	10 – 12
TP-2	P2	10 – 11
TP-3	P3	10 – 11

(1) Samples submitted to Severn Trent Laboratories in Edison, New Jersey

Table 4
Bench-Scale Testing Samples

TEST PIT NUMBER	SAMPLE NUMBER	DEPTH (FEET BGS)
TP-1	PTT-1 (1)	10 – 12
TP-1	BST-1a (2)	10 – 12
TP-1	BST-1b (2)	10 – 12
TP-2	PTT-2 (1)	10 – 12
TP-2	BST-2a (2)	10 – 12
TP-2	BST-2b (2)	10 – 12
TP-3	PTT-3 (1)	10 – 11
TP-3	BST-3a (2)	10 – 11
TP-3	BST-3b (2)	10 – 11

(1) Sample delivered to Hazen Laboratories in Golden, Colorado. To be held pending decision to perform thermal desorption analyses.

(2) Sample being held a LEC pending decisions on performing other bench-scale tests.

Table 5
Coarse Grain-Size Summary

TEST PIT NUMBER	DEPTH RANGE (FEET BGS)	PERCENT COARSER THAN 2.5 INCHES
TP-1	1 – 12	60
TP-2	1 – 5	50 - 70
TP-2	5 - 12	60 - 80
TP-3	0 - 5	25
TP-3	5 - 8	15
TP-3	8 - 12	40

Table 6
Product Analytical Summary [1]

Test Pit No.	1	2	3
Sample Number	P1	P2	P3
Ethylbenzene	1,100,000	18,000	670,000
Xylenes	2,400,000	140,000	2,000,000
DEHP	17,000,000	9,400,000	7,900,000

[1] All results in μg/Kg

Table 7
Product Constituent Properties Summary [1]

	Ethylbenzene	Xylene[2]	DEHP
Odor	Sweet, gasoline-like	sweet	faint
Formula	C_8H_{10}	C_8H_{10}	$C_{24}H_{38}O_4$
Formula Weight	106.2	106.2	390.57
Density	0.867	0.864 - 0.880	0.985
Boiling Point (°C)	136.2	138 - 144	385
Vapor Pressure (mm @ 20°C)	7.08	6.6 – 8.7	$2x10^{-7}$
Vapor Density (g/L @ 25°C)	4.34	4.34	7.94
Henry's Law Constant (atm·m³/mol)	0.0066	0.005 – 0.007	0.00011
Flashpoint (°C)	15	17 - 27	196
Log K_{oc}	1.98	2.10 – 3.20	5.0
Log K_{ow}	3.13	2.18 – 3.20	4.2
Solubility in water (mg/L at 20°C)	152	173 - 200	0.041
PEL (mg/m³ in air)	435	435	5
LEL (percent)	1	1	0.3
Viscosity (mPas @ 25°C)			56.6

(1) Unless otherwise noted, values cited form Montgomery J.H. and Welkom, L.M., 1990, *Groundwater Chemicals Desk Reference*, Lewis Publishers

(2) Some values dependent on specific *o*-, *m*-, or *p*-xylene isomer present.

Table 8
Materials From On-Site Excavation Activities
L.E. Carpenter and Company Wharton New Jersey NJD002168748

MATERIAL CATEGORY	MATERIAL NAME	DESCRIPTION	CLASSIFICATION (HAZARDOUS, NON-HAZARDOUS, ID-27 RUBBLE)	APPROXIMATE QUANTITY (YD³ UNLESS SPECIFIED)	DISPOSITION
A	Overburden soil, fill and debris from excavation area	Soil, debris, and fill material. Soil with Pb concentrations >600 mg/kg but not TCLP hazardous for Pb. This is overburden excavated above the Free-product smear zone. This category includes the ID-27 debris generated as the result of Bldg 13 and 14 demolition activities, the 20,000 sq ft former Bldg 14 foundation slab, and the 5,000 sq ft concrete slab thought to exist within the former AST area, approximately 10 ft bgs. Both slabs are considered ID-27 Rubble.	Non-hazardous(1)(5)(7)	7,700	On-site management and reuse as sub-grade fill material
B	Paint sludge/ multi-colored to tan process waste material and associated soils	Brightly multicolored sludge & putty with hazardous levels of Pd, Cd, and organics. Waste stream located in a former infiltration gallery located adjacent to the former AST area, in the old piping gallery between the former AST area and mfg. Bldg. 14.	Hazardous D006, D008	200 - 1,000	Off-site treatment and disposal
C	Upper-layer soils, fill and debris	Material with Pb concentrations <600 mg/kg excavated outside of the lead soil contaminant zone only to expose the underlying free product smear zone soils.	Non-hazardous(7)	4,000	On-site management and reuse as sub-grade fill material and/or thin spread material
D	Free-product smear zone soil	Organic chemical-impacted soils "smeared" with Free-product layer but containing no free liquids. Materials proposed for excavation from two predetermined depths 1) the top of the product smear zone and 2) to a depth below the water table where product may exist due to historically low water table elevation.	Non-hazardous(2)	4,200	Off-site disposal as non-hazardous industrial waste
E	Copper contaminated soil	Green-colored process waste soil and sludge discovered between Bldg. 12 and penstock outlet on the Rockaway River. Soil concentrations were 137 mg/L Cu and 0.7 mg/L Pb.	Non-hazardous	100	Off-site disposal as non-hazardous waste
F	Free-product layer-liquid	Organic solvent- hazardous ignitable liquid with a high concentration of xylene removed from groundwater in wet excavation area.	Hazardous F003 (6)	4,700 - 9,700 gal (3)	Off-site treatment and disposal
G	Absorbent pads containing free product material	Absorbent material (pads, booms, skimmers, or similar absorbent aids) containing free-product waste. Generated from removing residual free-product from groundwater not collected by pumping. Initial characterization is non-hazardous.	Non-hazardous(4)	2 - 10 (based on 10% of free-product layer assumed left from pumping.	Off-site treatment and disposal

Table 8
Materials From On-Site Excavation Activities
L.E. Carpenter and Company Wharton New Jersey NJD002168748

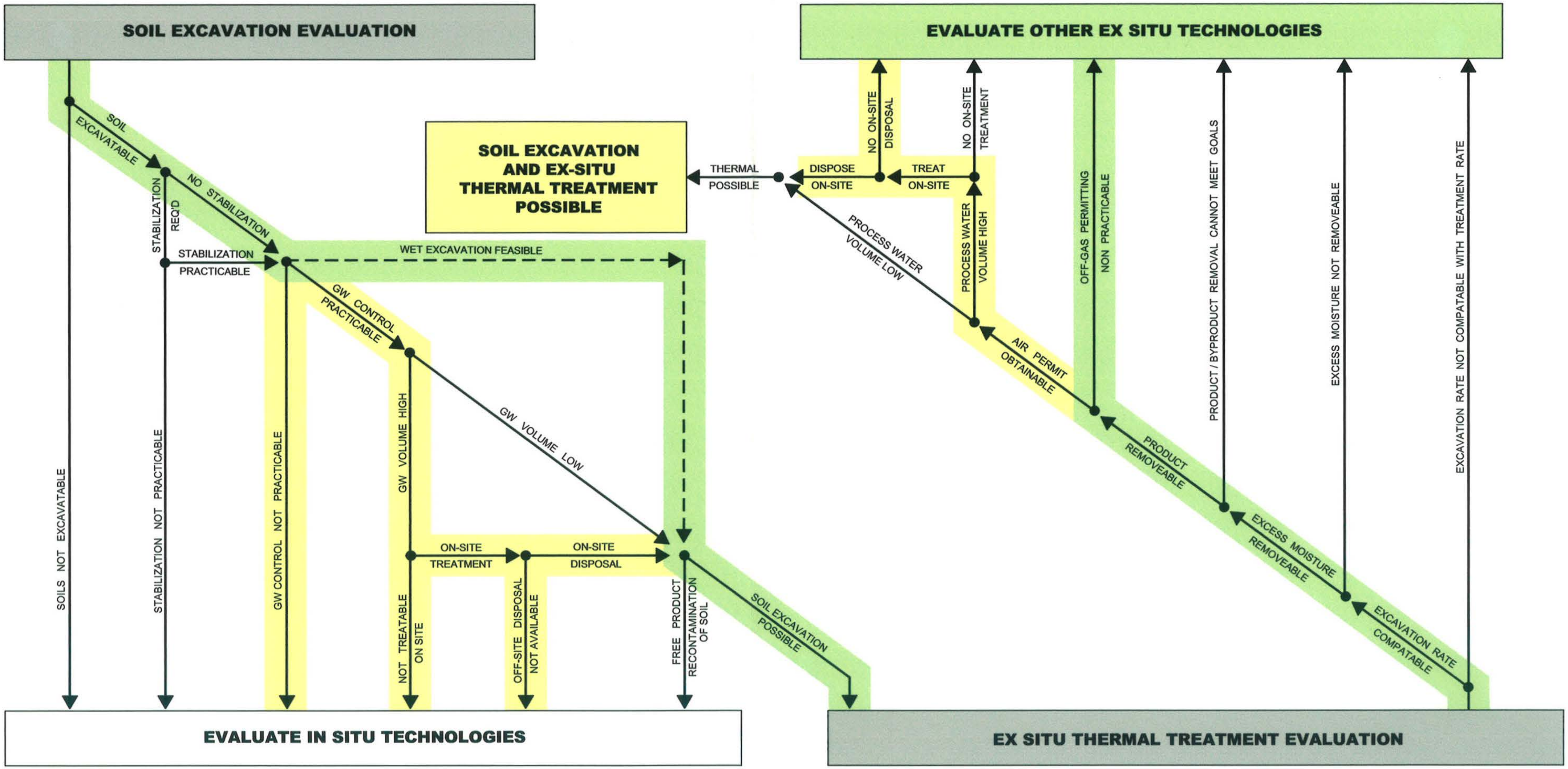
MATERIAL CATEGORY	MATERIAL NAME	DESCRIPTION	CLASSIFICATION (HAZARDOUS, NON-HAZARDOUS, ID-27 RUBBLE)	APPROXIMATE QUANTITY (YD^3 UNLESS SPECIFIED)	DISPOSITION
H	Miscellaneous Construction debris	Other potential concrete slabs, footers, mason blocks, piping, etc.	ID-27 Rubble(5)(9)	100 - 300 (upper level quantity unknown	Off-site disposal in a construction debris landfill
I	Construction debris "cleaning" residual	Visual inspection of construction debris may show a portion of the stream needs removal of hazardous material (free product). Construction debris "cleaning" residual material (*i.e.*, washwater) would be generated during cleaning of contaminated debris.	Hazardous Wash Waters (gal)(6)(8)	2000 gallons	Off-site treatment and disposal
J	PCB Soils	Soils located in the Wharton enterprise property exhibiting a PCB concentration greater than the site-specific cleanup criteria of 2 mg/kg. Weston delineated an area of 11,850 sq ft in Dec 1993. This remedial approach was documented in the report entitled Workplan for Phase I ROD Implementation (Weston, Oct 1994). Excavation volume based on removal of 11,850 sq ft of soils to a maximum of 2 ft (depth of static water table).	Non -Hazardous (assumed - will characterize waste at time of generation)	900	Off-site disposal as non-hazardous waste

Notes

1. The non-hazardous determination is based on historical waste classification sampling performed by Roy F. Weston (December 1994) on inorganic impacted soils excavated from Hot Spot A, B, C, and D as presented in their letter to the NJDEP dated January 11, 1995. The NJDEP agreed with the non-hazardous determination in the letters dated February 28, 1995 and August 9, 1995 and subsequently not subject to land ban.
2. Non hazardous classification assumes that the soils, once free liquids are removed prior to characterization, will not be considered characteristically hazardous.
3. Free product volumetric range based upon anticipated recoverable volume of product outlined in Free Product Volume Analysis (RMT, 2000) minus the collected volume to date of approximately 3,300 gallons. Assume total extraction volume of 25,000 gallons (free product w/groundwater emulsion).
4. Non hazardous classification assumes that the absorbent pads not exhibiting the characteristic of ignitability.
5. ID-27 Rubble determination provided by the NJDEP to backfill material into the Bldg. 14 foundation in their letter dated February 28, 1995.
6. Assume treatment and disposal remains consistent with EFR fluid management from Nov 1997 to present.
7. If offsite management scenario as a non-hazardous industrial waste is required, this volume will be reduced by 60% as material will be screened and separated (*i.e.,* fill, concrete) and concrete classified as an ID-27 Rubble.
8. Construction debris "cleaning" residual volumes are assumed to be 2000 gallons of wash/decon waters.
9. Off site disposal volume assumed to be 200 cu yds.

Figures

RMT COMPUTER AIDED DESIGN AND DRAFTING



PATHWAY FORWARD

ALTERNATE PATHWAY FORWARD

PATHWAY BLOCKED

L.E. CARPENTER
WHARTON, NEW JERSEY

TECHNOLOGY EVALUATION DECISION ANALYSIS

DRAWN BY:	SJL	PROJECT NUMBER:	3868.28
CHECKED BY:	DD	FILE NUMBER:	38682814.DWG
APPROVED BY:	NC	DATE:	MARCH 2002

RMT INC.

1143 HIGHLAND DRIVE, SUITE B
ANN ARBOR, MI. 48108-2237
PHONE: 734-971-7080
FAX: 734-971-9022

FIGURE 1

PLOT DATA
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Plot Time: 11:48.4225 AM
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Technology	Physical and Chemical Data Needs																		
	Penetrability	Atterbergs	Shear Strength	Drainability	Stratigraphy	Grain size	Permeability	Fluid Yields	Moisture content	Volumes	Water Table	Viscosity	Vapor Pressure	BP and FP	Solubilities	Surface Tension	Org. Compounds	Inorg. Compounds	Off Gasses
Containment	1				1	4	5			1	6								
Hydraulic Control	1				1	4	5	5	●	1	6								
GW Extraction	1			1	1	4	5	5		1	6						4	4	
Source Removal																			
Soil Removal	1	2	2	1	1	4		5	●	1	6						4	4	
Product Recovery					1	4	5	5	●	1	6	7	7	7		●	4	4	
GW Recovery					1	4	5	5		1	6						4		
***In situ* Treatment and Mobilization**																			
Chemical Oxidation					●	●	●			●	●		●				●	●	●
DUS – Hydrous Pyro.					●	●	●			●	●			●			●		●
Surfactant/Solvent					●	4	●			●	●	●			7	●	●		●
Thermal					●	4	●	●		●	●	7	7	7			●	●	●
***Ex situ* Treatment**																			
Chemical Oxidation									●	●				●			●	●	●
Thermal Desorption						4			●	1	6		7	7			4	4	●
Thermal Destruction									●	●			7	7			●	●	●
Soil Washing						4			●	●	6	7			●	●	●	●	●
Dewatering				1		4			●	1	6								
Hauling				1		4													
Soil Disposal				1		4											4	4	

1. Visually evaluated in field and assessed for this technology
2. Analysis not performed due to coarse soil fraction
3. Data not evaluated for this technology, but applicable if evaluation needed later
4. Media sampled and lab analyses performed and evaluated
5. Visually assessed in lieu of quantitative testing
6. Visually assessed and compared to old data
7. Data acquired from literature searches

● Not evaluated for this technology at this time

L.E. CARPENTER
WHARTON, NEW JERSEY

MATRIX OF POTENTIAL
REMEDIATION TECHNOLOGIES

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G:\WPAAM\PJT\00-03868\27\FIG2.DOC 03/14/02

FIGURE 2

RMT COMPUTER AIDED DESIGN AND DRAFTING

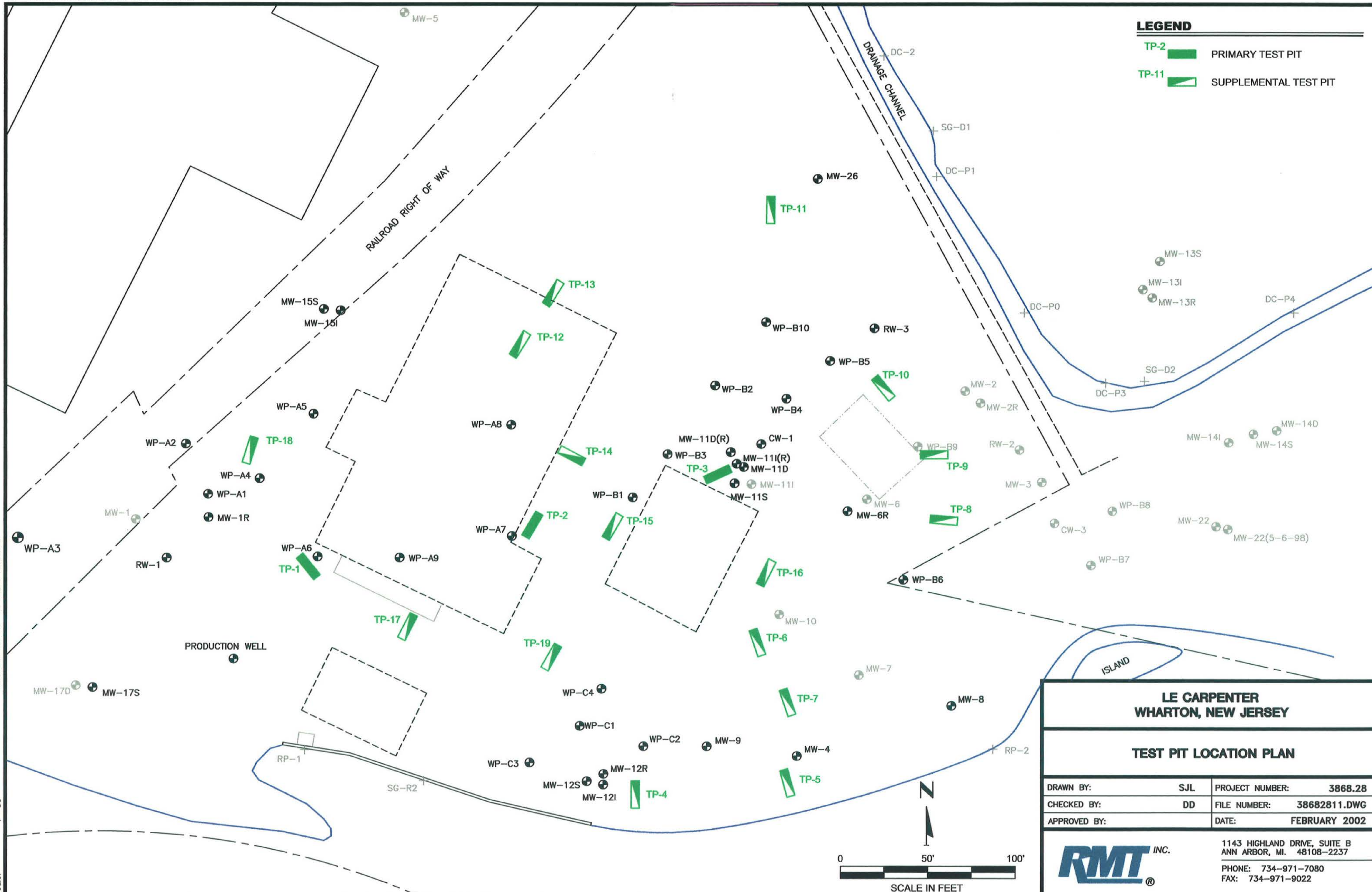

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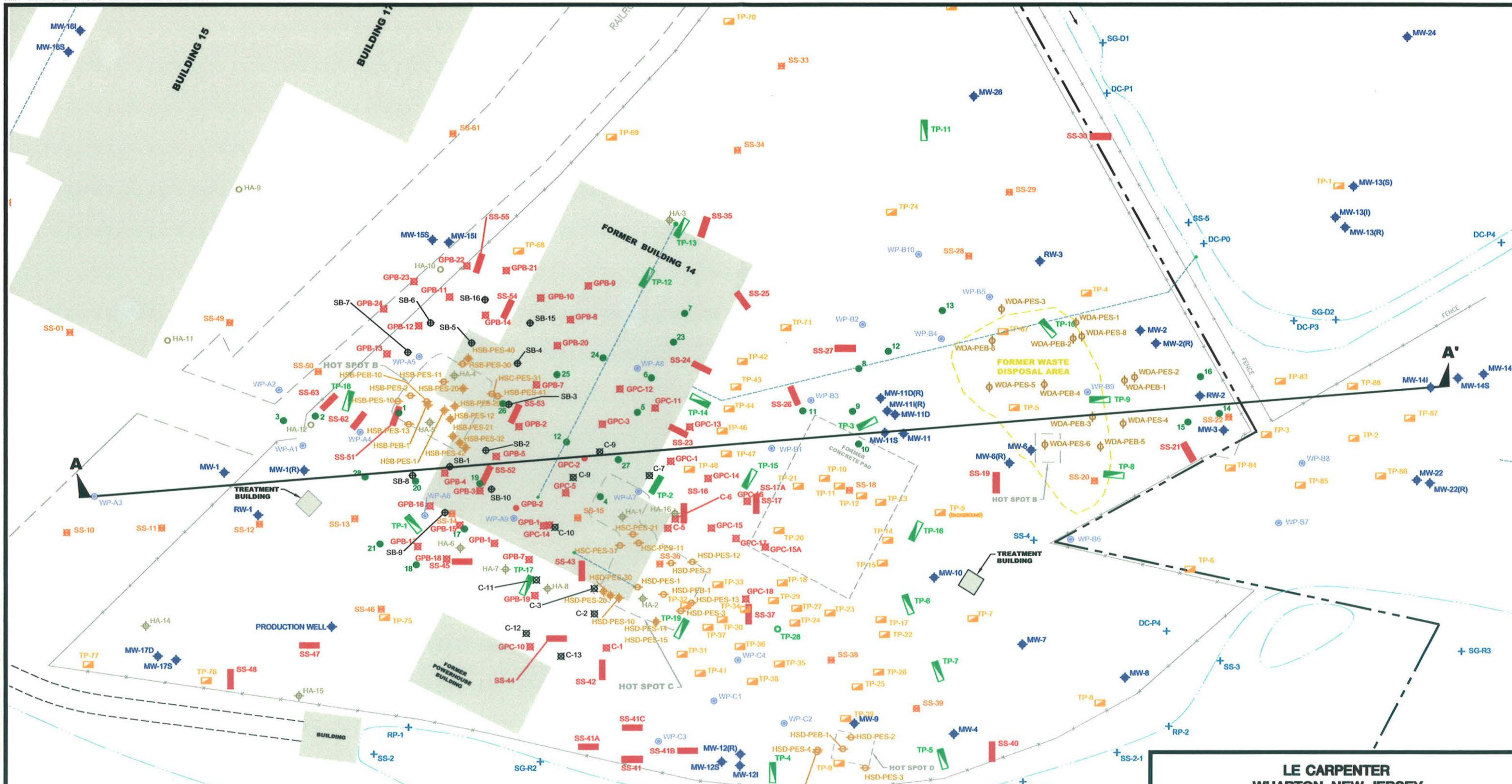
FIGURE 3

RMT COMPUTER AIDED DESIGN AND DRAFTING



SAMPLE OR MONITORING LOCATION AND NUMBER

- DC-P5 — SEDIMENT OR SURFACE WATER SAMPLE
- TP-11 — TEST PIT (WESTON, 1990–1992)
- HA-7 — HAND AUGER BORINGS (WESTON, 1990–1992)
- HSD-PES-20 — HOT-SPOT POST EXCAVATION SAMPLES (WESTON, 1990–1992)
- WDA-PES-3 — WASTE DISPOSAL AREA POST-EXCAVATION BORING (WESTON)
- SB-8 — SOIL BORING (WESTON, 1996)
- MW-21 — MONITORING WELL LOCATION AND NUMBER
- WP-B7 — WELL POINT LOCATION AND NUMBER
- GEI-2I — PIEZOMETER LOCATION AND NUMBER
- GPC-14 — SOIL BORING (RMT, 1999)
- SS-55 — SURFACE SOIL LEAD SAMPLE (RMT, 2001)
- SS-18 — SURFACE SOIL AND TEST PIT LEAD SAMPLE (RMT, 2001)
- TP-11 — FREE PRODUCT TEST PIT (RMT, 2001)
- 13 — ENHANCED FREE-PRODUCT RECOVERY WELL

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HISTORIC INVESTIGATION PLAN

DRAWN BY:	SJL	PROJECT NUMBER:	3868.28
CHECKED BY:	DD	FILE NUMBER:	38682810.DWG
APPROVED BY:	NC	DATE:	MARCH 2002

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FIGURE 4

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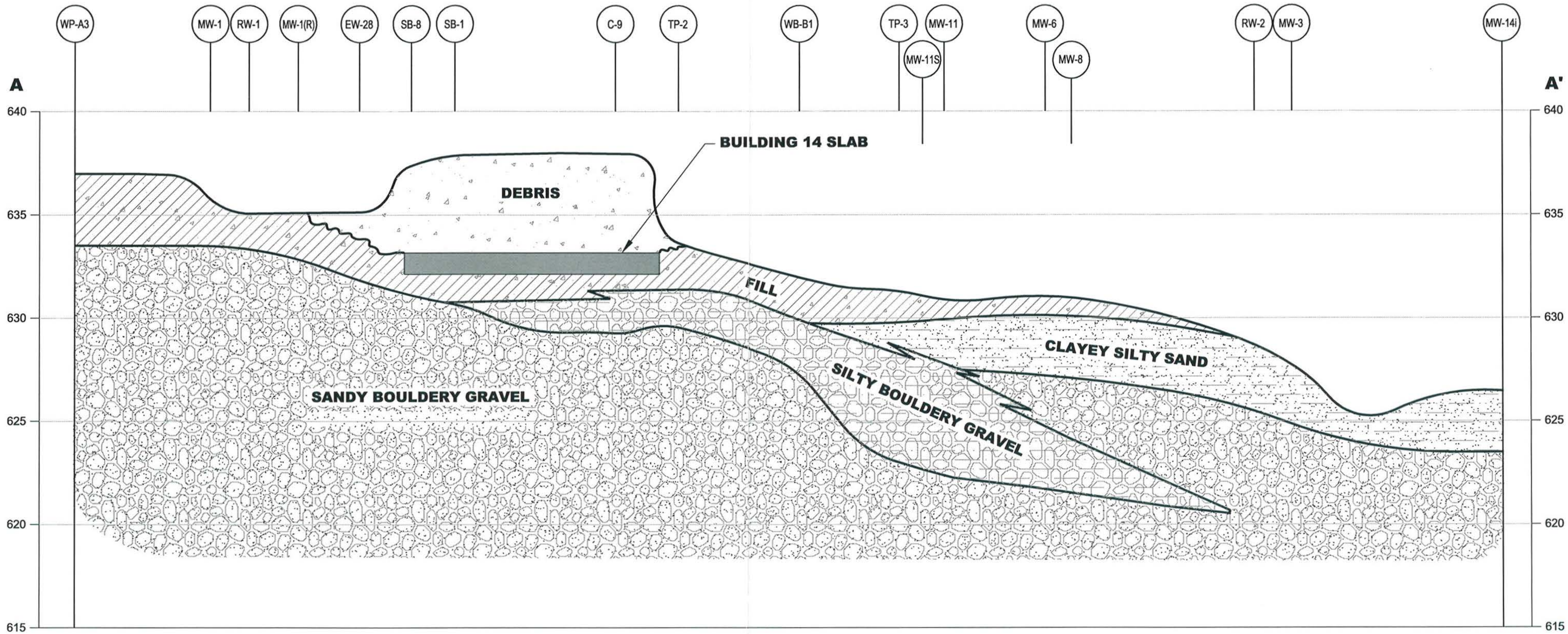

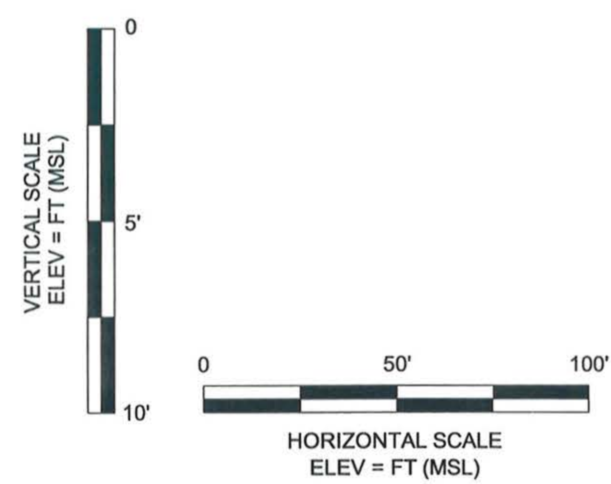

L.E. CARPENTER WHARTON, NEW JERSEY	
STRATIGRAPHIC PROFILE A - A'	
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CHECKED BY: DD	FILE NUMBER: 38682802.DWG
APPROVED BY: NC	DATE: MARCH 2002

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FIGURE 5

PLOT DATA
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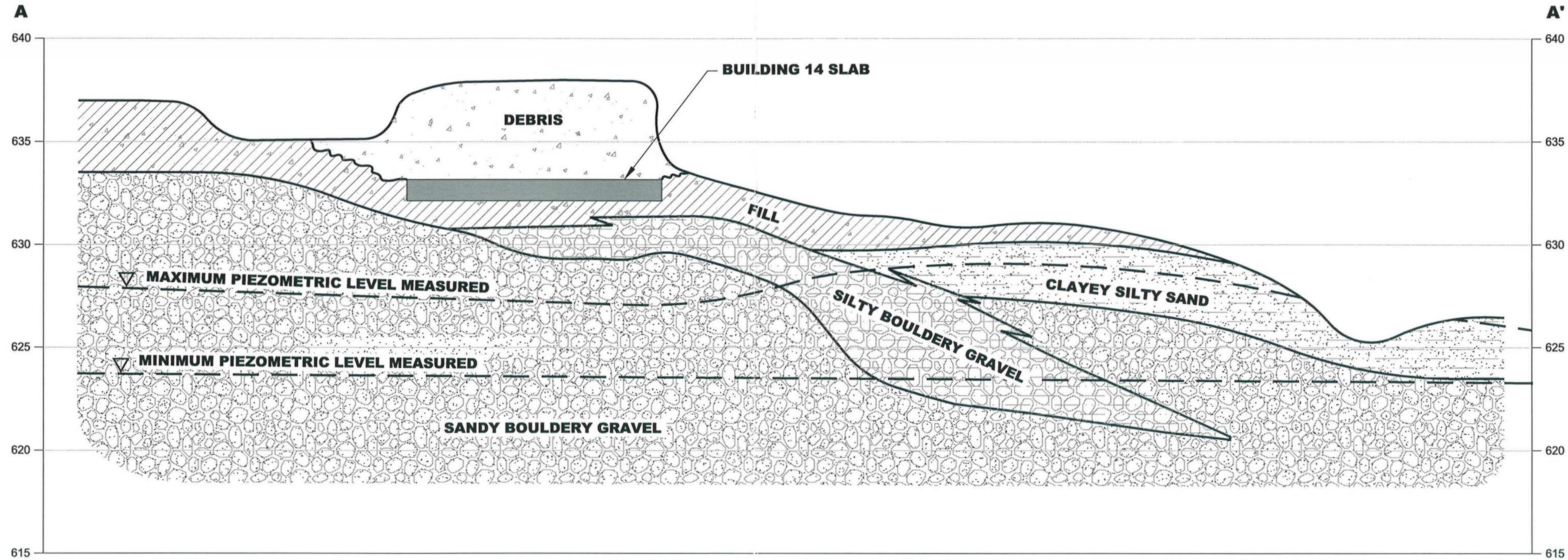
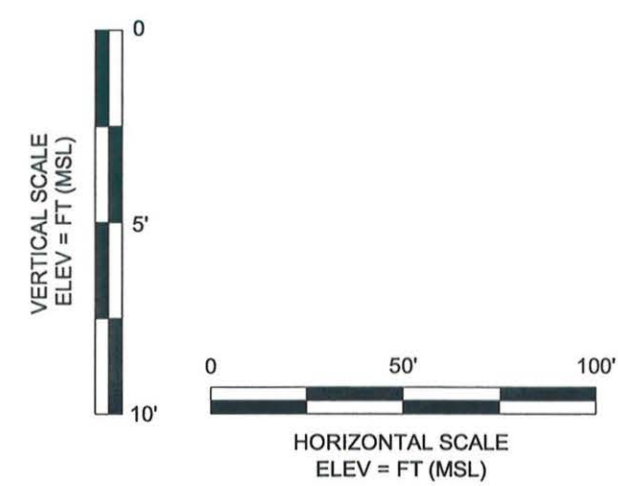
RMT COMPUTER AIDED DESIGN AND DRAFTING





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HYDROGEOLOGIC PROFILE A - A'

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CHECKED BY:	DD	FILE NUMBER:	38682803.DWG
APPROVED BY:	NC	DATE:	MARCH 2002

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FIGURE 6

PLOT DATA
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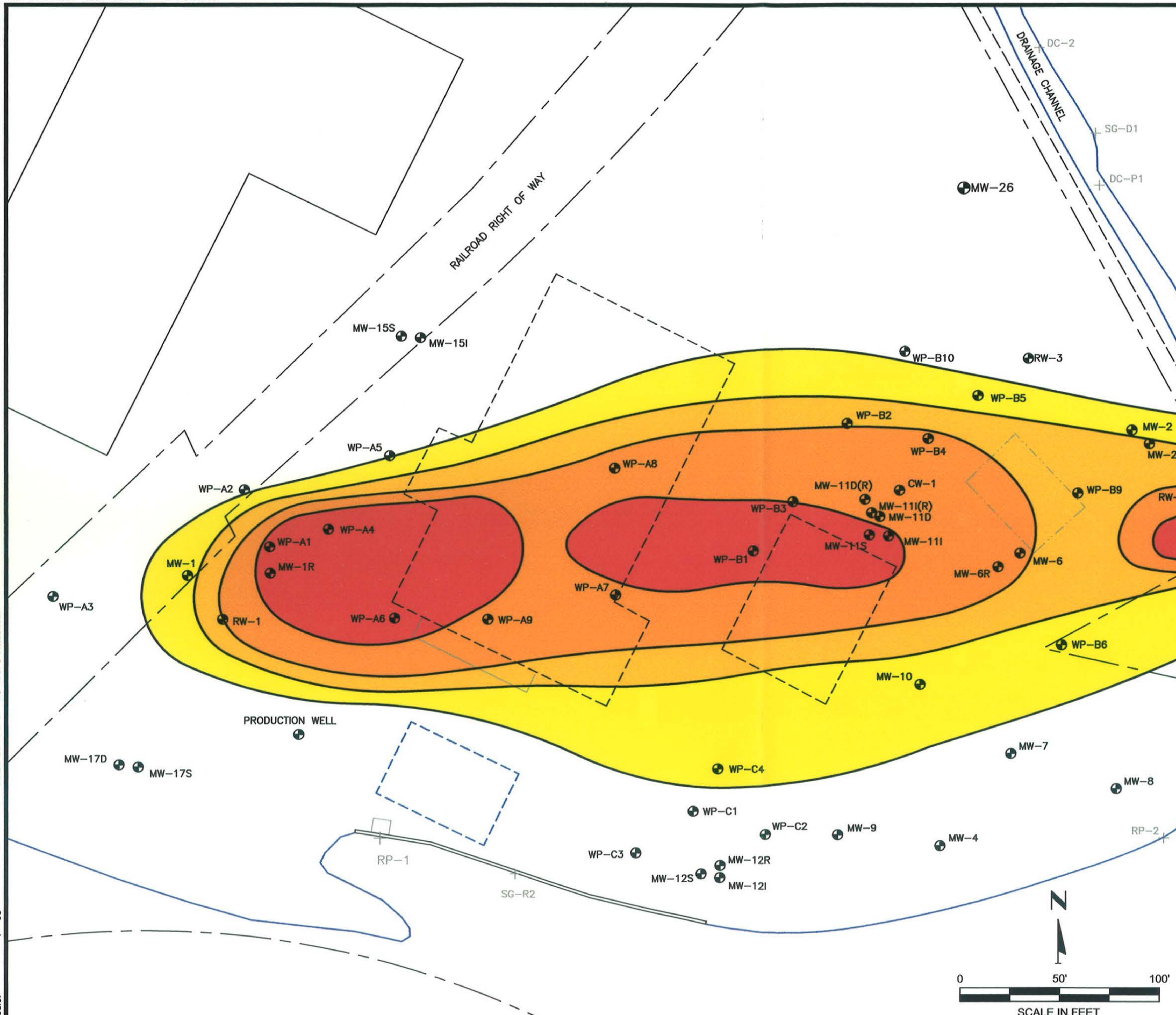

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PROBABILITY OF IMMISCIBLE FLUIDS

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CHECKED BY:	DD	FILE NUMBER:	38682807.DWG
APPROVED BY:		DATE:	MARCH 2002

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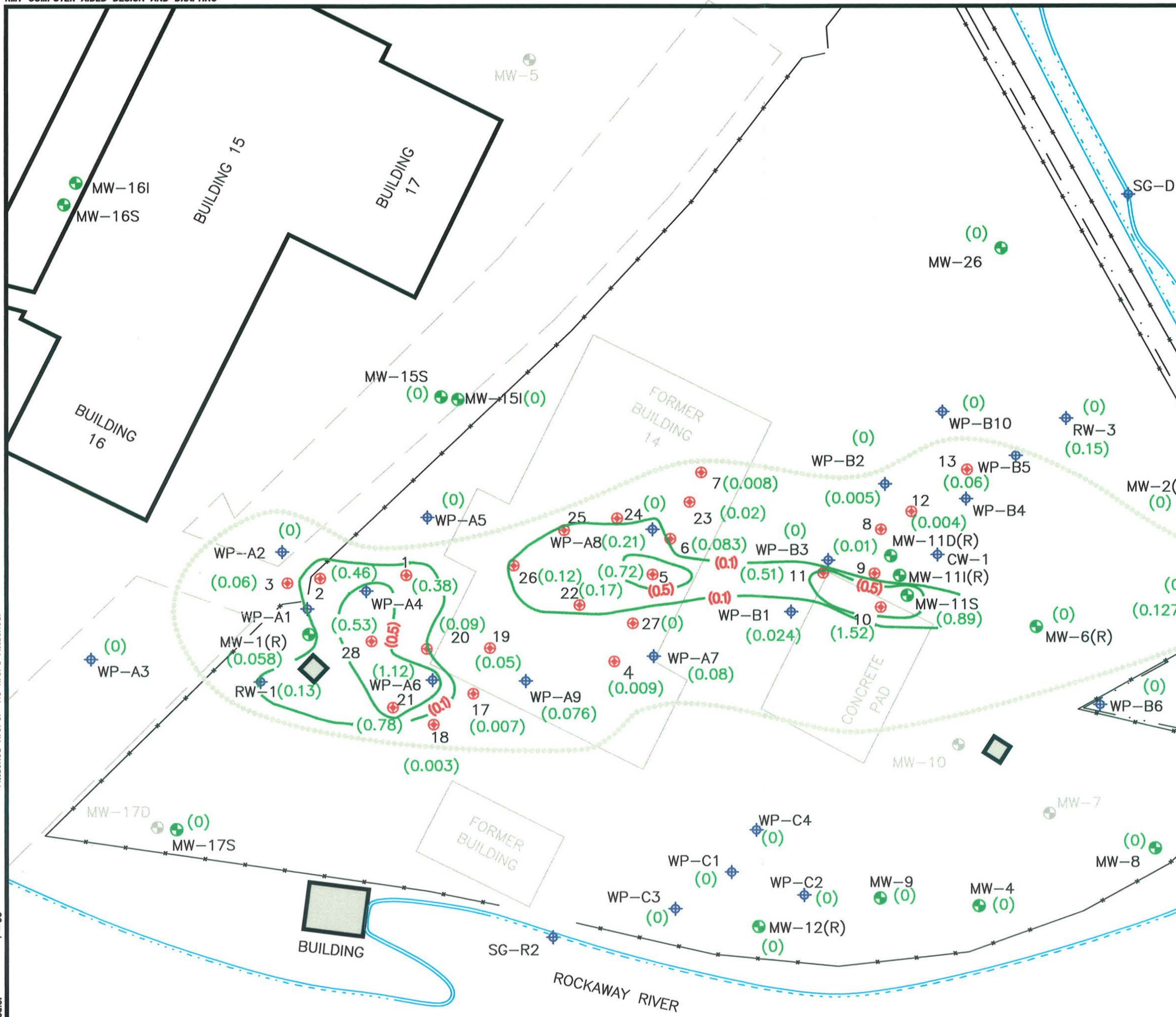
FIGURE 7

RMT COMPUTER AIDED DESIGN AND DRAFTING



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MODELED PRODUCT THICKNESS

DRAWN BY:	SJL	PROJECT NUMBER:	3868.28
CHECKED BY:	DD	FILE NUMBER:	38682812.DWG
APPROVED BY:	NC	DATE:	MARCH 2002

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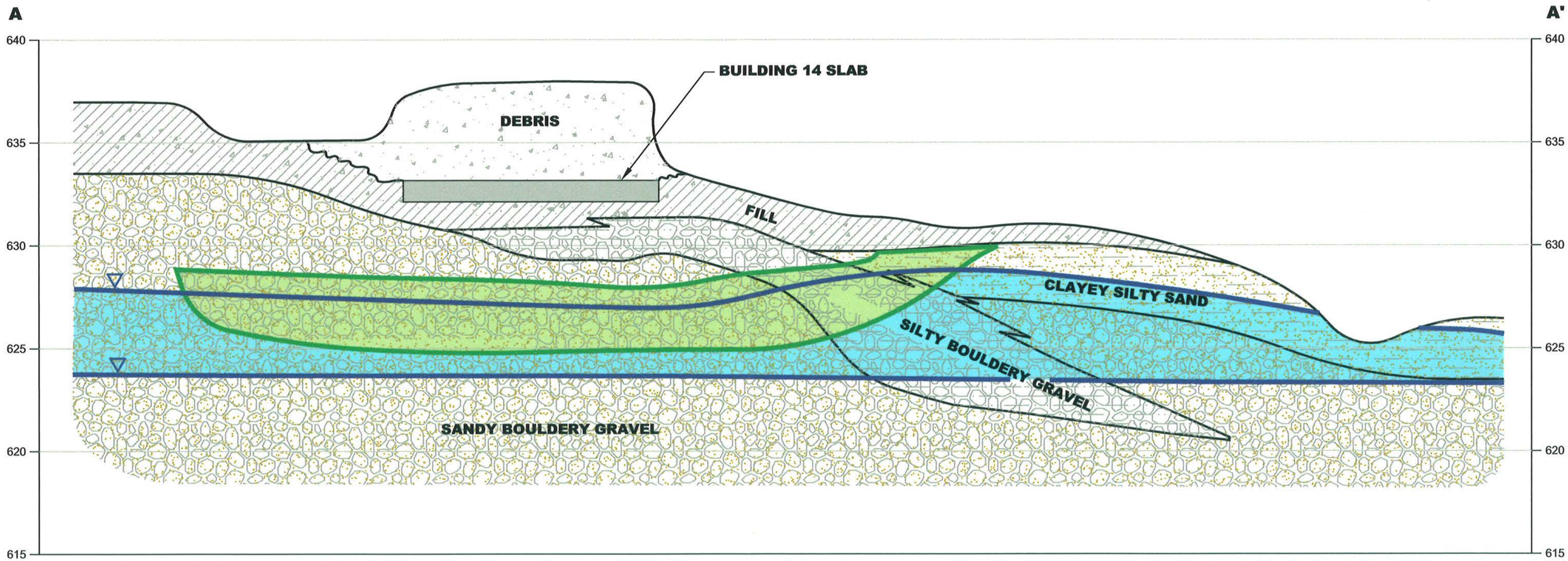
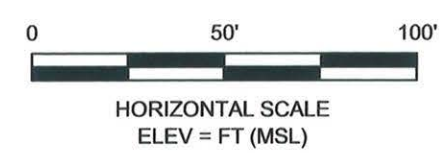
FIGURE 8



LEGEND

- PROBABLE ZONE OF FLOWING IMMISCIBLE FLUIDS
- POTENTIAL ZONE OF SMEARED IMMISCIBLE FLUIDS



L.E. CARPENTER WHARTON, NEW JERSEY			
PRODUCT ZONE PROFILE A - A'			
DRAWN BY:	SJL	PROJECT NUMBER:	3868.28
CHECKED BY:	DD	FILE NUMBER:	38682808.DWG
APPROVED BY:		DATE:	MARCH 2002

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FIGURE 9

PLOT DATA
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RMT COMPUTER AIDED DESIGN AND DRAFTING

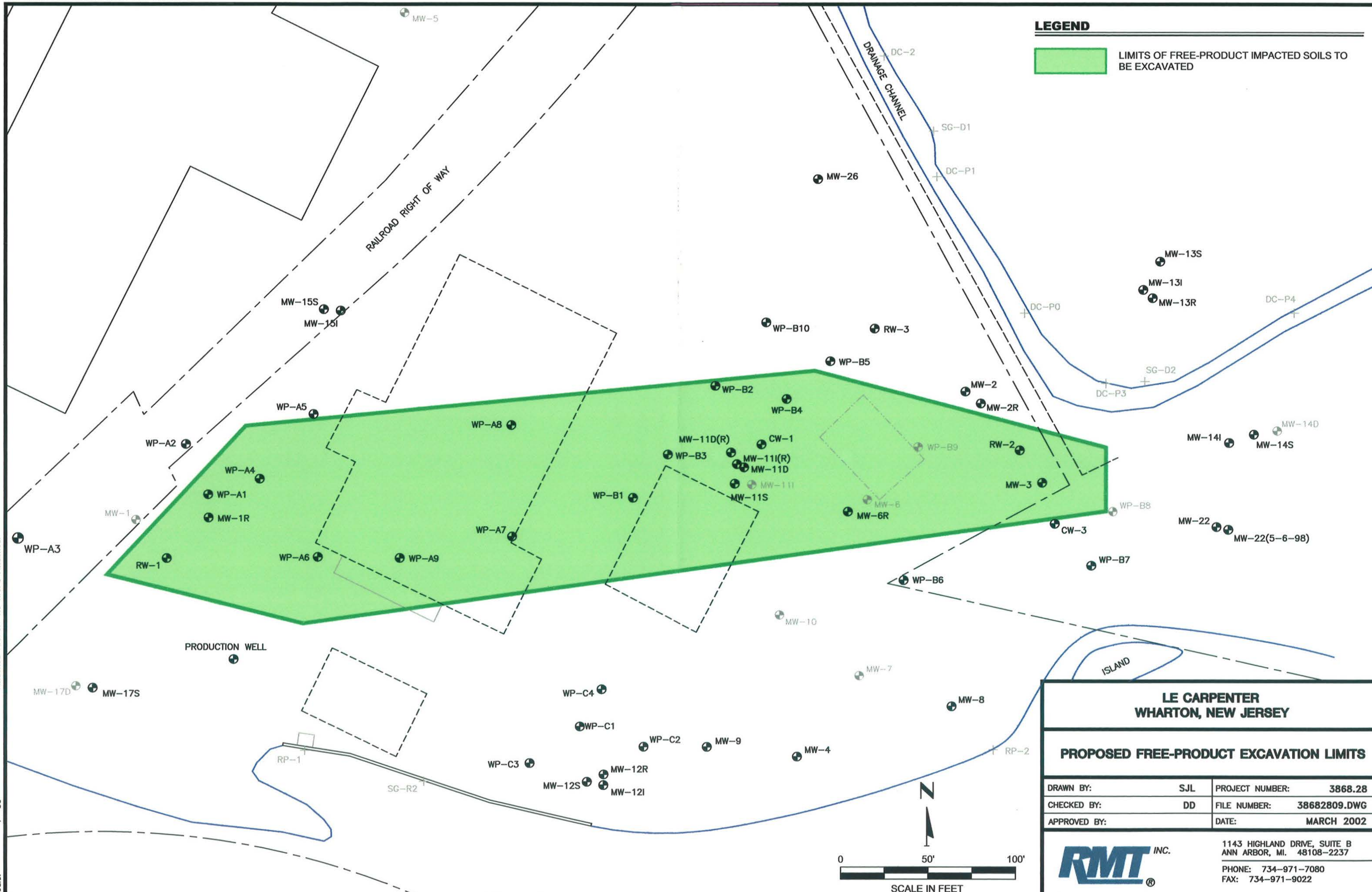

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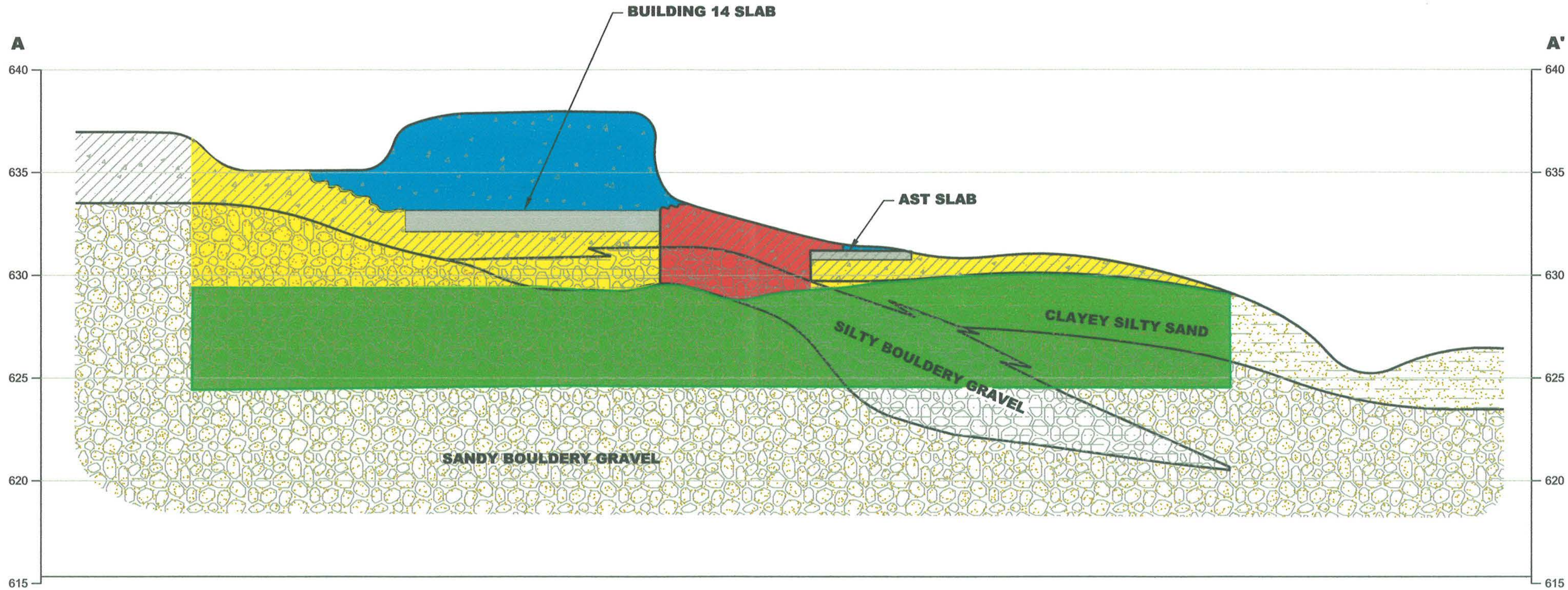
FIGURE 10

RMT COMPUTER AIDED DESIGN AND DRAFTING



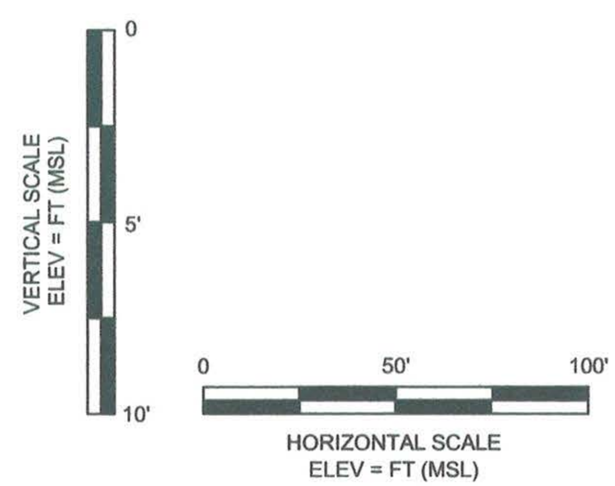
LEGEND

CATEGORY A SOIL
SOIL, FILL AND DEBRIS CONTAMINATED WITH > 600 ppm LEAD, BUT NO PRODUCT CONTAMINATION

CATEGORY B SOIL
SOIL, FILL AND DEBRIS HIGHLY CONTAMINATED WITH LEAD PIGMENTS AND ORGANICS.

CATEGORY C SOIL
SOIL WITH < 600 ppm LEAD AND NO PRODUCT CONTAMINATION

CATEGORY D SOIL
FREE-PRODUCT SMEAR ZONE SOILS



L.E. CARPENTER
WHARTON, NEW JERSEY

SOIL CATEGORY PROFILE

DRAWN BY:	SJL	PROJECT NUMBER:	3868.28
CHECKED BY:	DD	FILE NUMBER:	38682815.DWG
APPROVED BY:	NC	DATE:	MARCH 2002

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FAX: 734-971-9022

FIGURE 11

PLOT DATA
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Operator Name: lucidos
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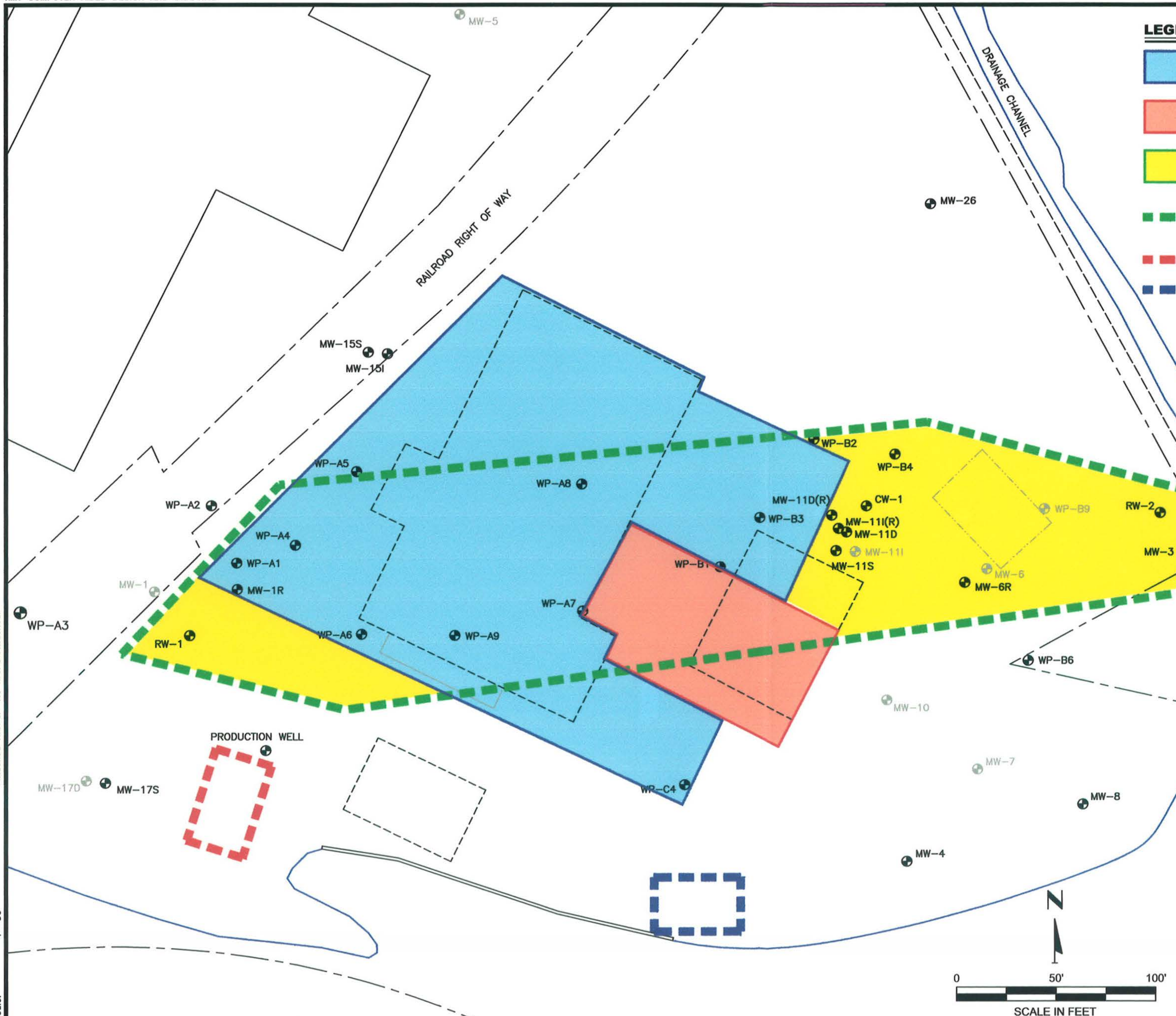
Attached Xref's: No xref's Attached.

RMT COMPUTER AIDED DESIGN AND DRAFTING



LE CARPENTER
WHARTON, NEW JERSEY

SOIL CATEGORY EXCAVATION PLAN

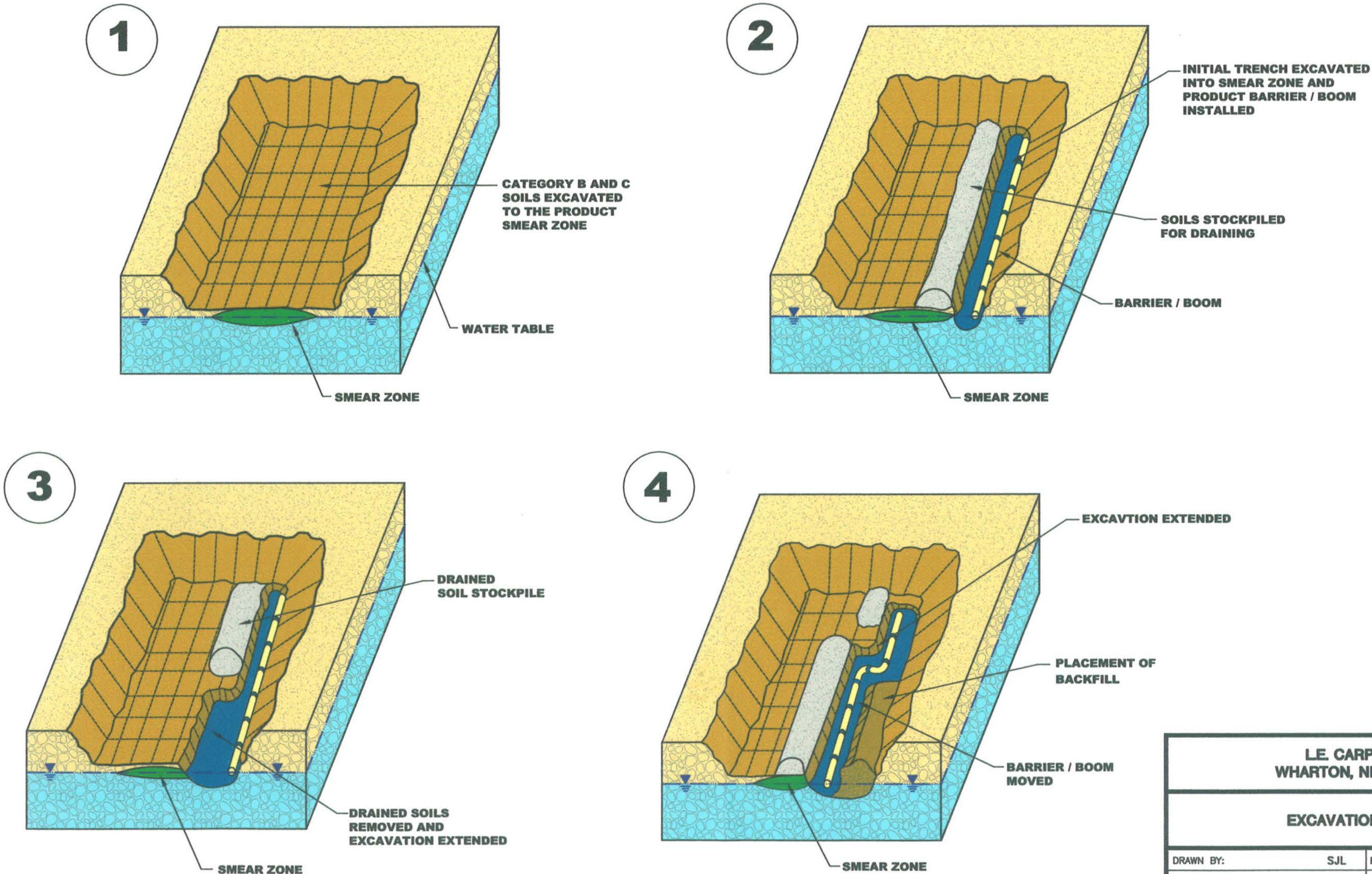
DRAWN BY:	SJL	PROJECT NUMBER:	3868.28
CHECKED BY:	DD	FILE NUMBER:	38682816.DWG
APPROVED BY:	NC	DATE:	MARCH 2002

RMT INC.
1143 HIGHLAND DRIVE, SUITE B
ANN ARBOR, MI. 48108-2237
PHONE: 734-971-7080
FAX: 734-971-9022

FIGURE 12

PLOT DATA
Drawing Name: J:\03868\28\38682816.dwg
Operator Name: lucidos
Scale: 1"=50'
Dwg Size: 107190 Bytes
Plot Date: Tuesday, March 5, 2002
Plot Time: 12:10.4242 PM
Attached Xref's: No xref's Attached.

RMT COMPUTER AIDED DESIGN AND DRAFTING



L.E. CARPENTER
WHARTON, NEW JERSEY

EXCAVATION DETAILS

DRAWN BY:	SJL	PROJECT NUMBER:	3868.28
CHECKED BY:	DD	FILE NUMBER:	38682817.DWG
APPROVED BY:	NC	DATE:	MARCH 2002

RMT INC.
1143 HIGHLAND DRIVE, SUITE B
ANN ARBOR, MI. 48108-2237
PHONE: 734-971-7080
FAX: 734-971-9022

FIGURE 13

PLOT DATA
Drawing Name: J:\03868\28\38682817.dwg
Operator Name: lucidos
Scale: 1"=1'
Dwg Size: 89159 Bytes
Plot Date: Wednesday, March 6, 2002
Plot Time: 08:37.0422 AM
Attached Xref's: No xref's Attached.

Appendix A
Test Pit Logs

Test Pit Log

Sample Location Name: TP-1 **Excavation Date / Time:** 10 Dec 2001 / 0928

Project Name: LEC Free Product Investigation **Site:** L.E. Carpenter

Site Address: 120 Main Street, Wharton, NJ

RMT Project Number: 0003868.27 **RMT Project Manager:** N. Clevett

RMT Field Personnel: J. Mihalich, D. Diefendorf,, F. Paul

Excavation Contractor: Cemco

Surface Conditions: Grassy field near dirt road.

Air Temperature: 40F **Wind:** none **Weather Conditions:** clear, dry

Air Quality Measurements: 30 ppm(non-continuous) inside hole; zero in breathing zone

Device: PID **Odor:** paint thinner

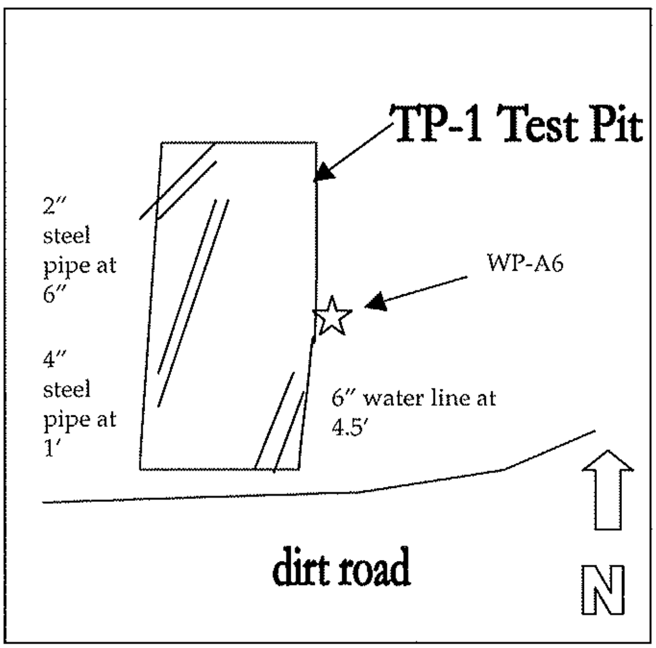
Depth to Groundwater: 9.5' (with product) **Infiltration Rate:** seeping; not flowing

Depth of Excavation: 13.5' **Excavation Dimensions:** 3 feet by 15 feet

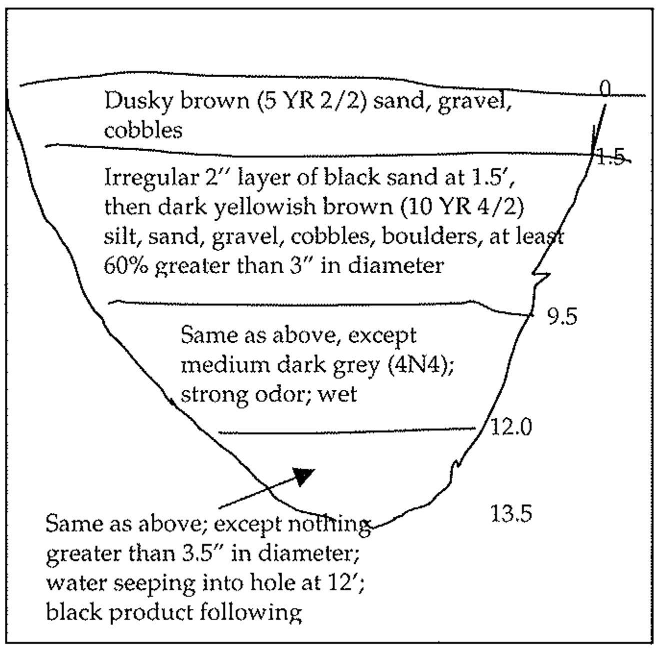
Shoring or Benching Description: No human entry - not shored

Pit Backfill Material: stone from 8 to 13.5'; then same

Test Pit Plan View



Test Pit Cross Section



Test Pit Log

Sample Location Name: TP-2 **Excavation Date / Time:** 11 Dec 2001 / 0803

Project Name: LEC Free Product Investigation **Site:** L. E. Carpenter

Site Address: 120 Main Street, Wharton, NJ

RMT Project Number: 0003868.27 **RMT Project Manager:** N. Clevett

RMT Field Personnel: J. Mihalich, D. Diefendorf, F. Paul

Excavation Contractor: Cemco

Surface Conditions: Uneven surface on bank of building foundation

Air Temperature: 50F **Wind:** none **Weather Conditions:** clear, dry

Air Quality Measurements: 86 ppm(non-continuous) inside hole; zero in breathing zone

Device: PID **Odor:** paint thinner

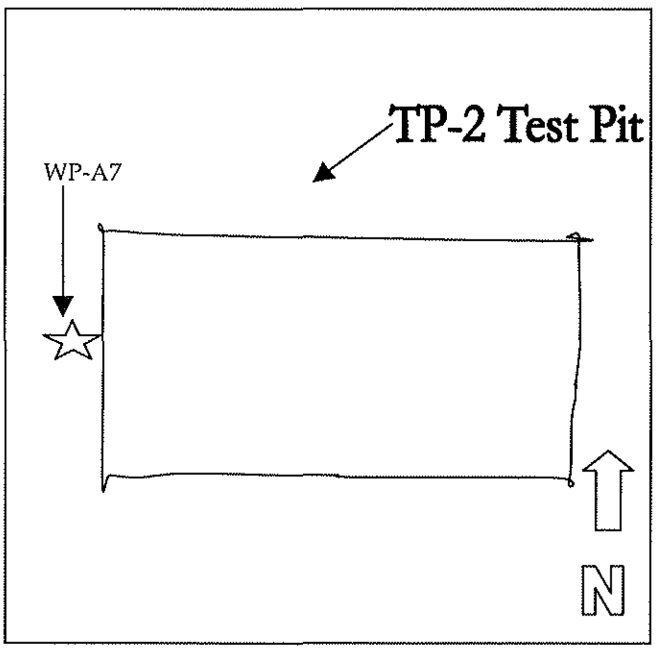
Depth to Groundwater: 11.5' (with product) **Infiltration Rate:** seeping; not flowing

Depth of Excavation: 11.5' **Excavation Dimensions:** 3 feet by 15 feet

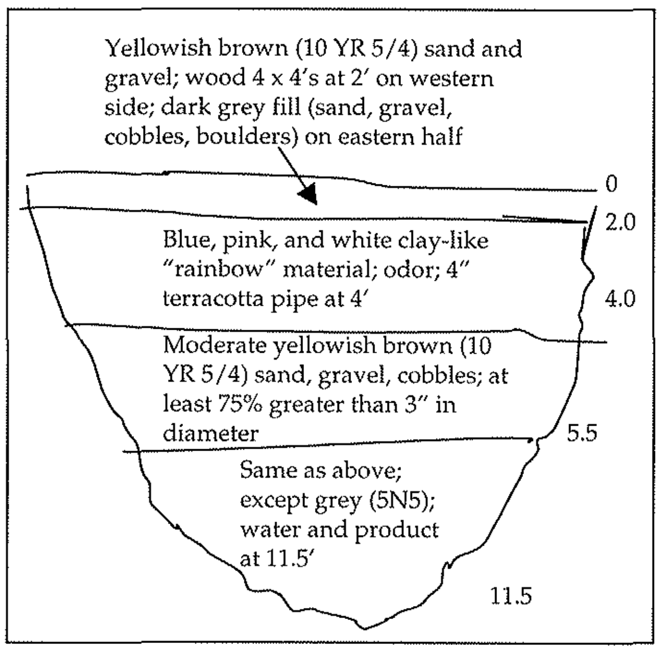
Shoring or Benching Description: No human entry - not shored

Pit Backfill Material: stone from 9.5 to 11.5'; then same

Test Pit Plan View



Test Pit Cross Section



Test Pit Log

Sample Location Name: TP-3 **Excavation Date / Time:** 10 Dec 2001 / 1340

Project Name: LEC Free Product Investigation **Site:** L.E. Carpenter

Site Address: 120 Main Street, Wharton, NJ

RMT Project Number: 0003868.27 **RMT Project Manager:** N. Clevett

RMT Field Personnel: J. Mihalich, D. Diefendorf, F. Paul

Excavation Contractor: Cemco

Surface Conditions: Grassy filed near dirt road and asphalt paved lot

Air Temperature: 40F **Wind:** none **Weather Conditions:** clear, dry

Air Quality Measurements: 70 ppm(downwind); zero upwind

Device: PID **Odor:** paint thinner

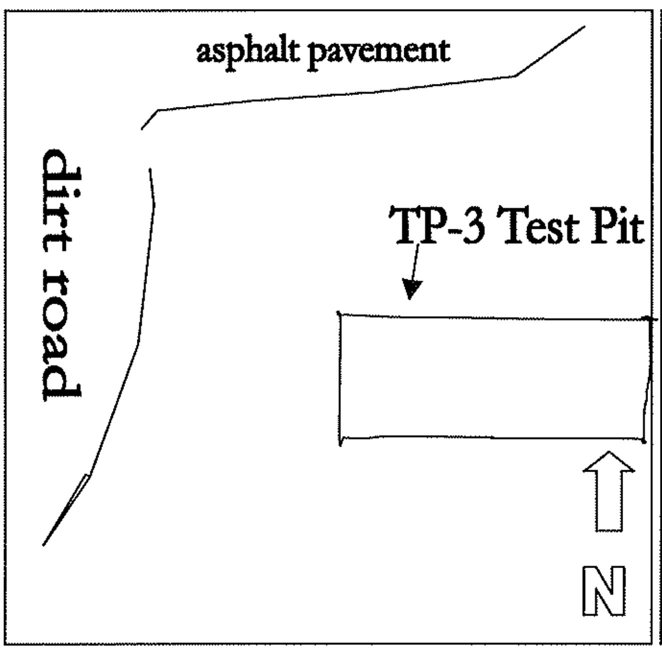
Depth to Groundwater: 11' **Infiltration Rate:** water flowing; not measured

Depth of Excavation: 11' **Excavation Dimensions:** 3 feet by 15 feet

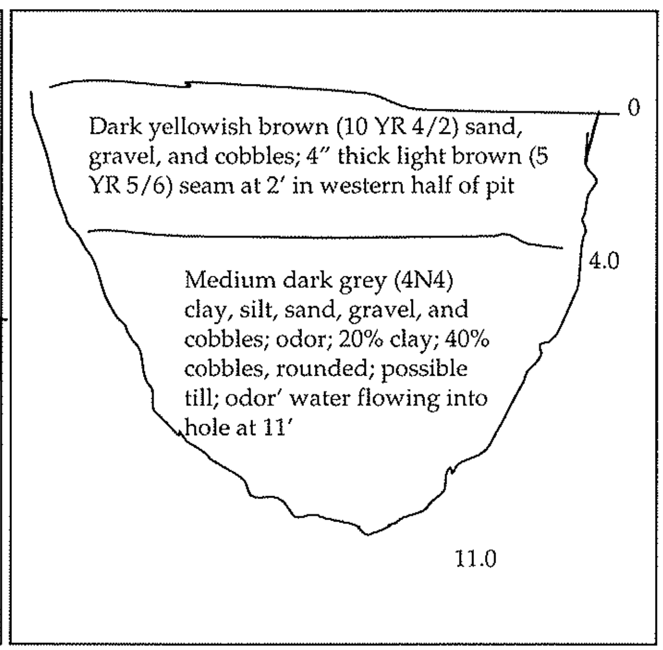
Shoring or Benching Description: No human entry - not shored

Pit Backfill Material: stone from 9 to 11'; then same

Test Pit Plan View



Test Pit Cross Section



Appendix B
Photographs

PHOTOGRAPHIC LOG		
Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
1	12/10/01

Description: TEST PIT 1

Cobble and boulder pavement

Photo No.	**Date:**
2	12/10/01

Description: TEST PIT 1

Cobbles

	PHOTOGRAPHIC LOG

Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
3	12/10/01

Description: TEST PIT 1

Coarse Fraction

Photo No.	**Date:**
4	12/10/01

Description: TEST PIT 1

Product Seep

RMT	PHOTOGRAPHIC LOG	
Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
5	12/10/01

Description: TEST PIT 3

Photo No.	**Date:**
6	12/10/01

Description: TEST PIT 3

RMT	**PHOTOGRAPHIC LOG**

Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
7	12/10/01

Description: TEST PIT 3

Photo No.	**Date:**
8	12/10/01

Description: TEST PIT 3

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
L. E. Carpenter & Company	L. E. Carpenter Wharton, New Jersey	3868.27

Photo No.	Date:
9	12/10/01

Description: TEST PIT 3

Boulder

Photo No.	Date:
10	12/10/01

Description: TEST PIT 3

PHOTOGRAPHIC LOG		
Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
11	12/10/01

Description: TEST PIT 2

Photo No.	**Date:**
12	12/10/01

Description: TEST PIT 2

PHOTOGRAPHIC LOG		
Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
13	12/11/02

Description: TEST PIT 2

Rainbow material

Pipe chase

Photo No.	**Date:**
14	12/11/02

Description: TEST PIT 2

	PHOTOGRAPHIC LOG	
Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
15	12/11/02

Description: TEST PIT 2

Water Influx

Photo No.	**Date:**
16	12/11/02

Description: TEST PIT 2

Stained Material

RMT	PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
L. E. Carpenter & Company	L. E. Carpenter Wharton, New Jersey	3868.27

Photo No.	Date:
17	12/11/02

Description: TEST PIT 2

Product on Water

Photo No.	Date:
18	12/11/02

Description: TEST PIT 2

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
L. E. Carpenter & Company	L. E. Carpenter Wharton, New Jersey	3868.27

Photo No.	Date:
19	12/11/02

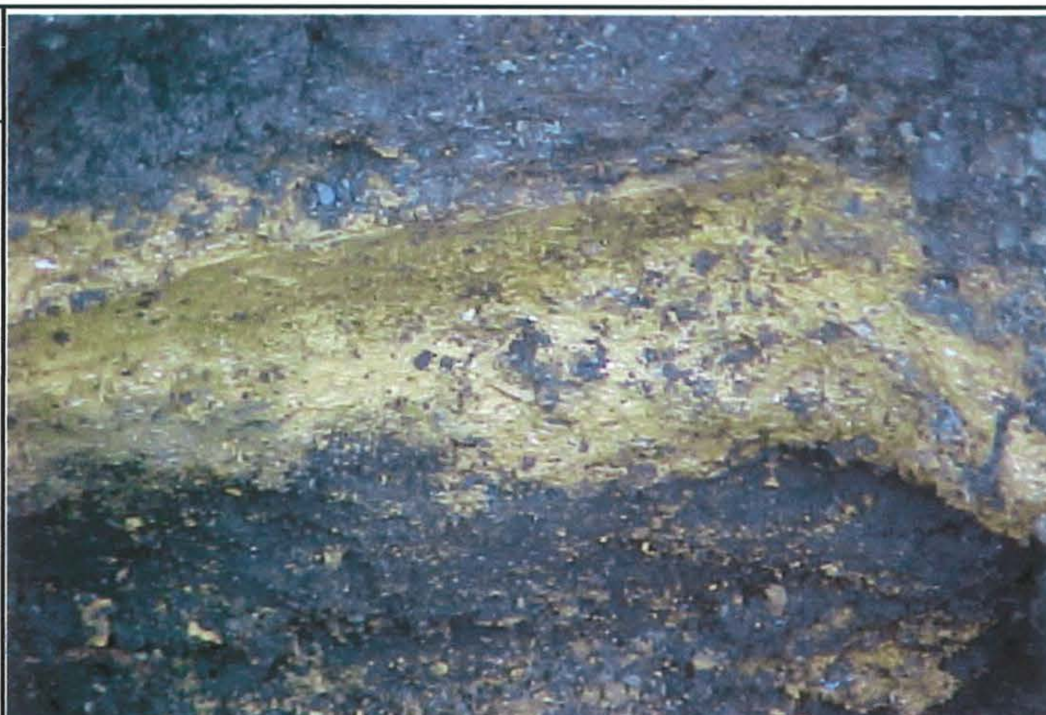
Description: TEST PIT 11

Yellow Waste material

Photo No.	Date:
20	12/11/02

Description: TEST PIT 11

Yellow waste



PHOTOGRAPHIC LOG		
Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
21	12/11/02

Description: TEST PIT 15

Pipe with product residue

Photo No.	**Date:**
22	12/11/02

Description: TEST PIT 15

Pipe with product residue

RMT	PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
L. E. Carpenter & Company	L. E. Carpenter Wharton, New Jersey	3868.27

Photo No.	Date:
23	12/11/02

Description: TEST PIT 15

Residue collected from pipe

Photo No.	Date:
24	12/11/02

Description: TEST PIT 15

Piping from Building 14

PHOTOGRAPHIC LOG		
Client Name: L. E. Carpenter & Company	**Site Location:** L. E. Carpenter Wharton, New Jersey	**Project No.** 3868.27

Photo No.	**Date:**
25	12/11/02

Description: TEST PIT 15

Pipes and debris

Appendix C
Supplemental Test Pit Logs

L. E. Carpenter
Wharton, New Jersey

Free-Product Remedial Strategies
Notes on Supplemental Test Pits Performed December 10 and 11, 2001

TP-4

Performed immediately adjacent to Rockaway River.

0 – 5 ft Material consists of mixed fill, fly ash and cinders.

@ 4 ft Water boils in quickly from recharge of river. No evidence of free product.

TP-5

0 – 1 ft	Topsoil and fill
1 – 5 ft	Gravels with 60 – 70% > 3 inch fraction
3.5 – 4 ft	Water pours in.
	No evidence if free product

TP-6

0 – 3 ft	grey/brown silty sand and gravel 15% > 3 inch
4 - 5 ft	gray product contamination evident. Water seeps at 4 feet, saturated at 5 feet. 60 – 70% > 3 inch. Silver/gray stain evident on cobble surfaces

TP-7

0 – 5 ft	Mixed native soil and fill. No evidence of contamination
	Water flowing in at 3.5 feet at ~ 4 gpm

TP-8

0 – 1.5 ft	Topsoil
1.5 – 5 ft	Grey cobbly gravel. Very strong solvent odor. Water seeps in at 3 feet.

TP-9

0 – 1 ft sand with layer of filter fabric

1 – 5 ft Mixed fill material with grey layers from 3 to 5 feet. Water running in at 4.5 feet

5 - 7 ft Bouldery Gravel. Strong solvent odor from 4 – 7 feet

TP-10

0 – 3 ft Mixed fill

3 – 4 ft Gray plastic fine-grained byproduct layer and free product seeping

4 – 5 ft Gravelly zone. Water flowing in at 4.5 feet at several gpm

TP –11

0 – 1 ft Grey silty sand and gravel beneath asphalt paving

1 – 2.5 ft	Mixed cobbly fill
2.5 – 2.8 ft	layer of yellow ochre colored fine-grained material
2.8 – 3.6 ft	black stained silty sand and gravel
3.6 – 5 ft	grey cobbly silty sand and gravel. Slight odor at 4 feet.

TP-12

0 – 5 ft	mixed building debris, sand and gravel
5 ft	hit concrete building slab

TP-13

0 – 5 ft	mixed building debris, sand and gravel
5 ft	hit concrete footings

TP-14

0 – 8 ft	mixed fill and silty sand and gravel. Excavated immediately adjacent to Building 14 footing. Solvent odor, but no "rainbow" soils encountered

TP-15

0 – 0.9 ft	mixed fine-grained fill
0.9 – 2 ft	Encountered wooden pipe race with several galvanized pipes ranging in diameter from 1.25 to 2.5 inches. Appears to be process return lines from Building 14 to AST pad area.
2 – 4 ft	Mixed fill with very strong odor
4 – 4.5 ft	Found zone of rainbow colored soils
	Pipes in race contained slimey residue similar to tan and gray fine-grained wastes found in other pits.
	Very strong odors. PID at 163 outside and downwind of pit

TP-16

0 – 4 ft Crushed stone. Water a 2.5 feet. Some free product, low odor level.

TP-17

0 – 6 ft	mixed very cobbly sand and gravel and heavy building debris.
6 – 9 ft	very tough bouldery gravel. Slight kerosene odor at 9 feet, No evidence of product.

TP-18

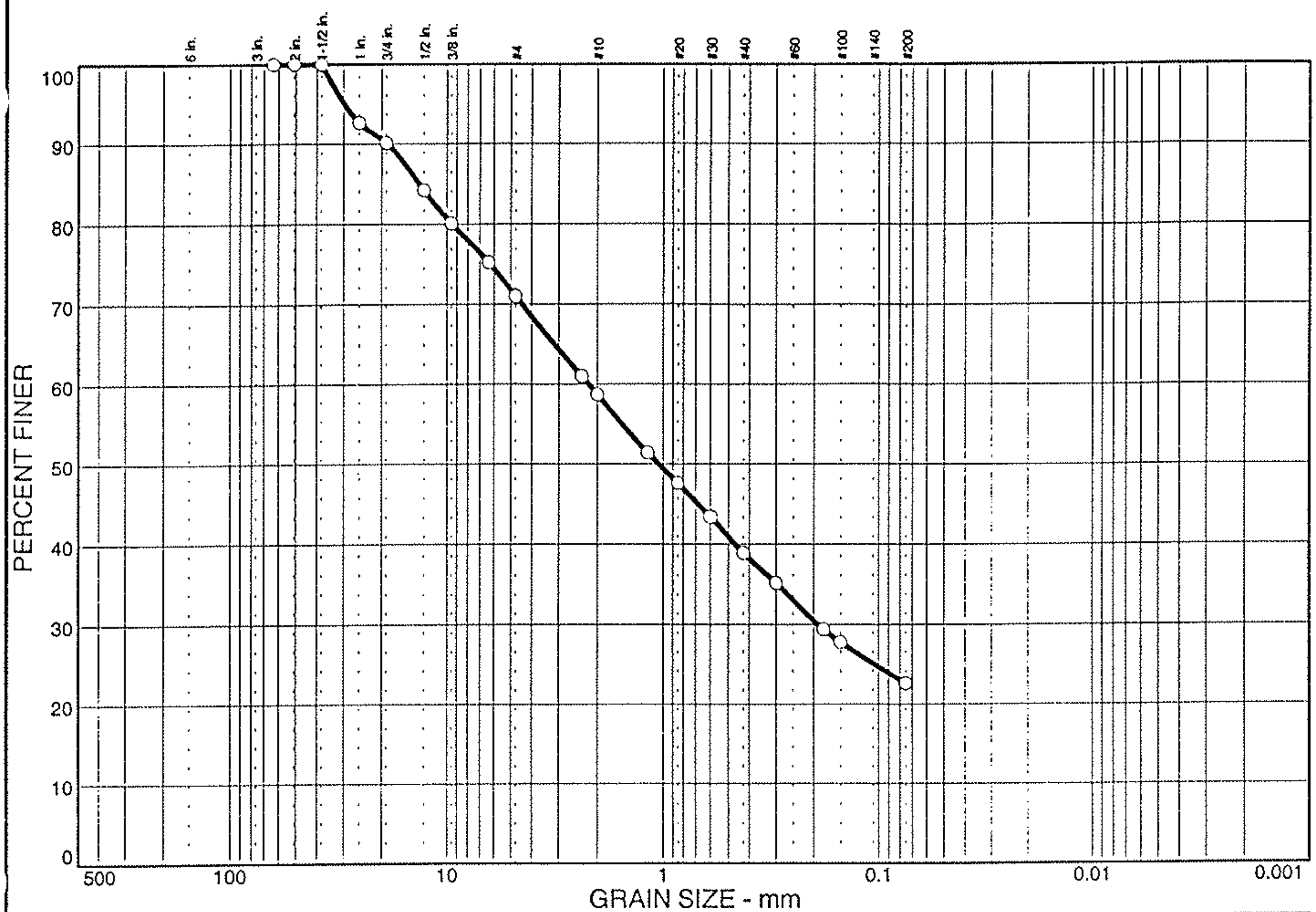
0 – 0.2 ft	asphalt
0.2 – 1.5 ft	mixed gravelly black and red fill
1.5 – 9 ft	very coarse cobbly bouldery gravel. Encountered very large, unexcavatable boulder at 9 feet.

TP –19

0 – 4.5 ft	mixed fill and sand and gravel. Moderate odor. Groundwater flows at several gpm at 4 feet. Slight sheen on water.

Appendix D
Laboratory Grain-Size Analyses

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	29.0	48.4	22.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	92.6		
.75 in.	90.1		
.5 in.	84.2		
.375 in.	80.1		
.25 in.	75.2		
#4	71.0		
#8	61.0		
#10	58.7		
#16	51.4		
#20	47.6		
#30	43.4		
#40	38.9		
#50	35.2		
#80	29.4		
#100	27.8		
#200	22.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 13.4 D_{60}= 2.20 D_{50}= 1.05
D_{30}= 0.191 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

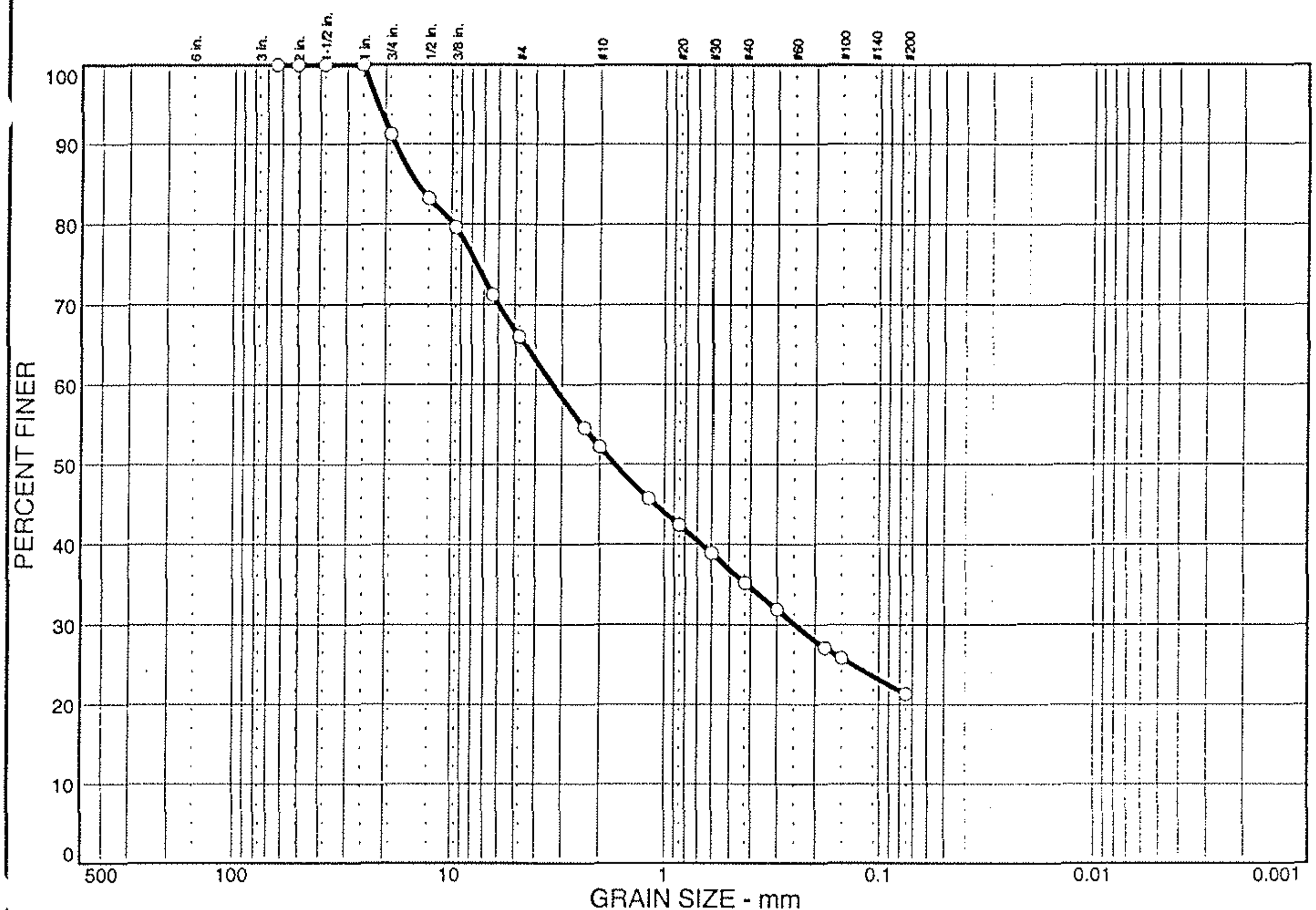
Remarks

Sample No.: GT-1-1, 1-2' Source of Sample: GT-1-1 Date: 12-20-01
Location: Elev./Depth:

RMT, Inc.

Client:
Project: L.E. CARPENTER
Project No: 3868.27 Figure:

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	34.0	44.7	21.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	100.0		
.75 in.	91.2		
.5 in.	83.2		
.375 in.	79.6		
.25 in.	71.2		
#4	66.0		
#8	54.6		
#10	52.2		
#16	45.7		
#20	42.4		
#30	38.9		
#40	35.2		
#50	31.9		
#80	27.1		
#100	25.8		
#200	21.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 14.3 D_{60}= 3.32 D_{50}= 1.70
D_{30}= 0.247 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

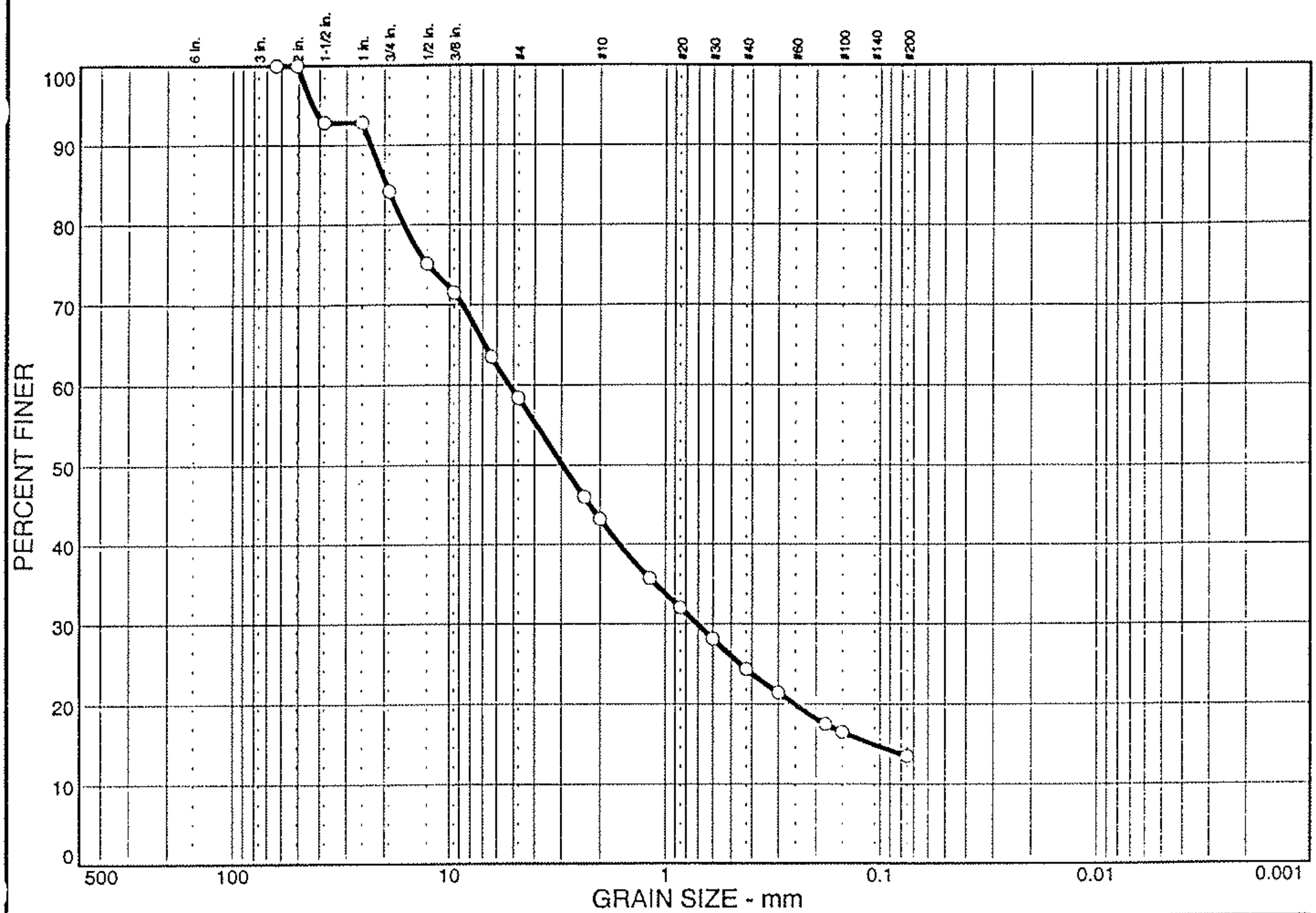
Remarks

Sample No.: GT-1-2, 3-6' **Source of Sample:** GT-1-2 **Date:** 12-20-01
Location: **Elev./Depth:**

RMT, Inc.

Client:
Project: L.E. CARPENTER
Project No: 3868.27 **Figure:**

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	41.6	44.9	13.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	92.8		
1.0 in.	92.8		
.75 in.	84.2		
.5 in.	75.1		
.375 in.	71.5		
.25 in.	63.5		
#4	58.4		
#8	46.0		
#10	43.2		
#16	35.7		
#20	32.0		
#30	28.1		
#40	24.3		
#50	21.4		
#80	17.5		
#100	16.5		
#200	13.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 19.6 D_{60}= 5.22 D_{50}= 2.96
D_{30}= 0.709 D_{15}= 0.108 D_{10}=
C_u= C_c=

Classification

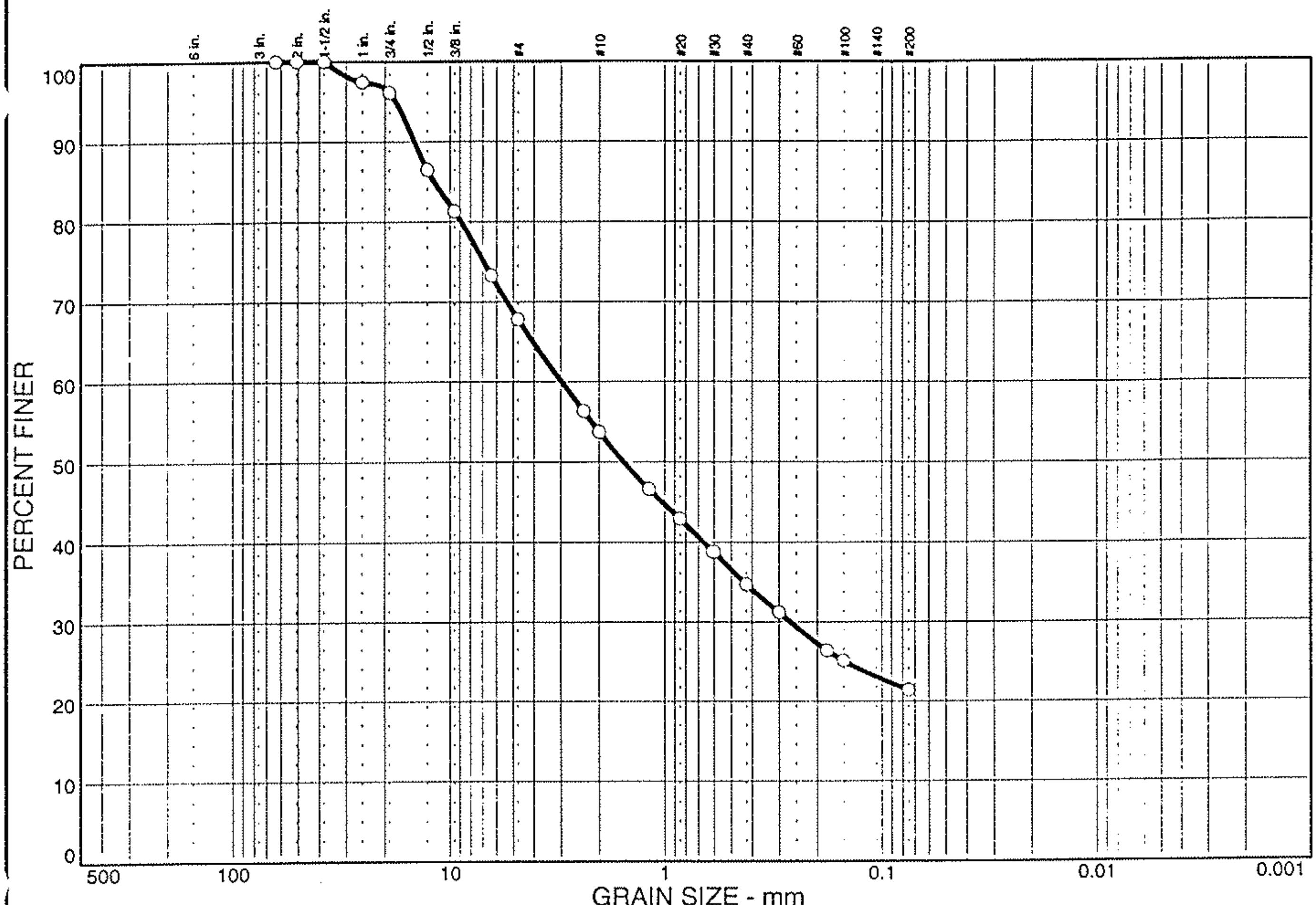
USCS= AASHTO=

Remarks

Sample No.: GT-1-3, 8-9' **Source of Sample:** GT-1-3 **Date:** 12-20-01
Location: **Elev./Depth:**

RMT, Inc.	**Client:** **Project:** L.E. CARPENTER **Project No:** 3868.27 **Figure:**

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	32.2	46.4	21.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	97.4		
.75 in.	96.1		
.5 in.	86.5		
.375 in.	81.3		
.25 in.	73.3		
#4	67.8		
#8	56.3		
#10	53.7		
#16	46.6		
#20	42.9		
#30	38.8		
#40	34.7		
#50	31.2		
#80	26.4		
#100	25.1		
#200	21.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 11.8 D_{60}= 2.98 D_{50}= 1.55
D_{30}= 0.266 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

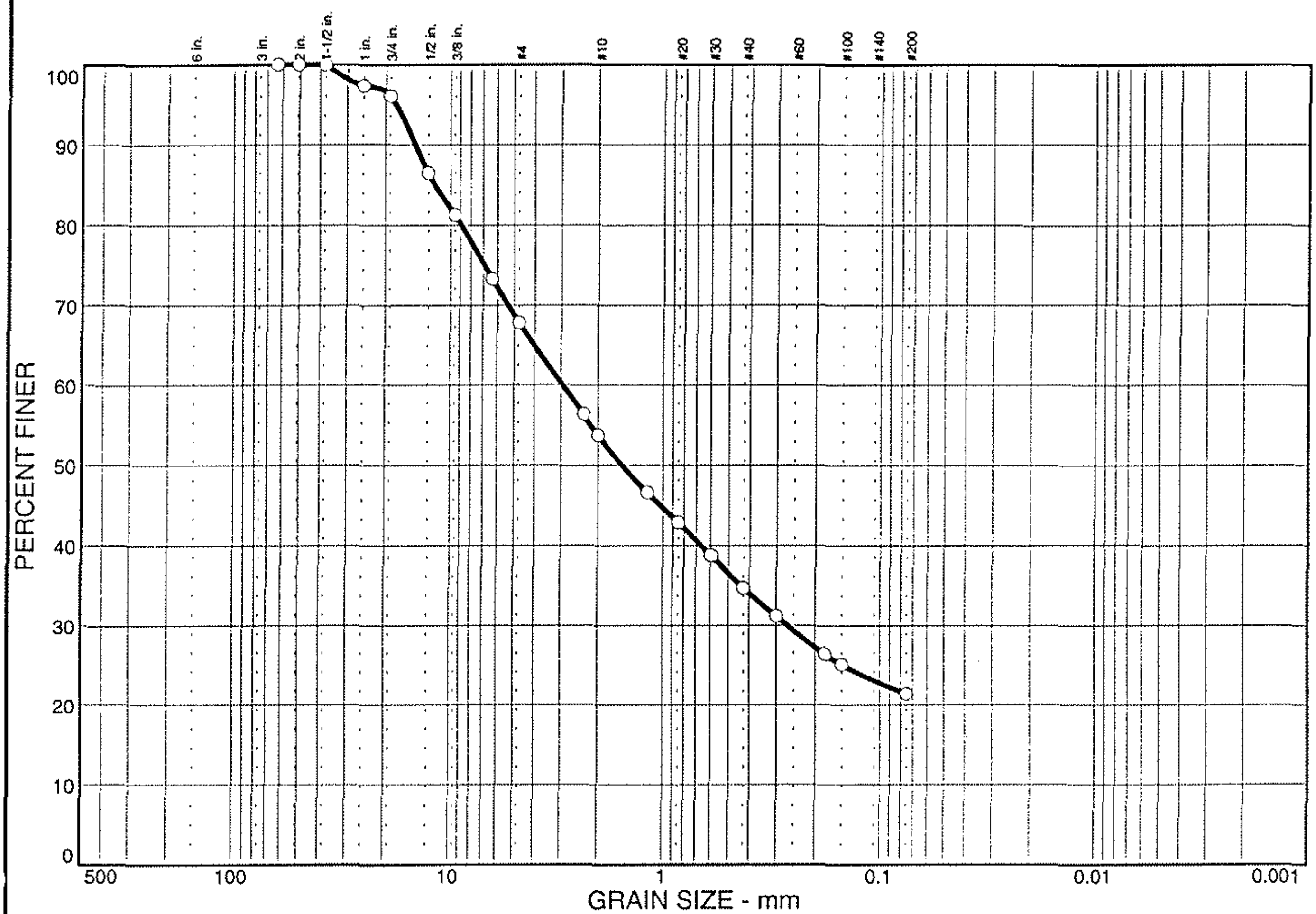
Sample No.: GT-2-1, 2-4' Source of Sample: GT-2-1 Date: 12-20-01
Location: Elev./Depth:

RMT, Inc.

Client:
Project: L.E. CARPENTER
Project No: 3868.27 Figure:

✓ #1

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	32.2	46.4	21.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	97.4		
.75 in.	96.1		
.5 in.	86.5		
.375 in.	81.3		
.25 in.	73.3		
#4	67.8		
#8	56.3		
#10	53.7		
#16	46.6		
#20	42.9		
#30	38.8		
#40	34.7		
#50	31.2		
#80	26.4		
#100	25.1		
#200	21.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 11.8 D_{60}= 2.98 D_{50}= 1.55
D_{30}= 0.266 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: GT-2-1, 2-4' **Source of Sample:** GT-2-1 **Date:** 12-20-01
Location: **Elev./Depth:**

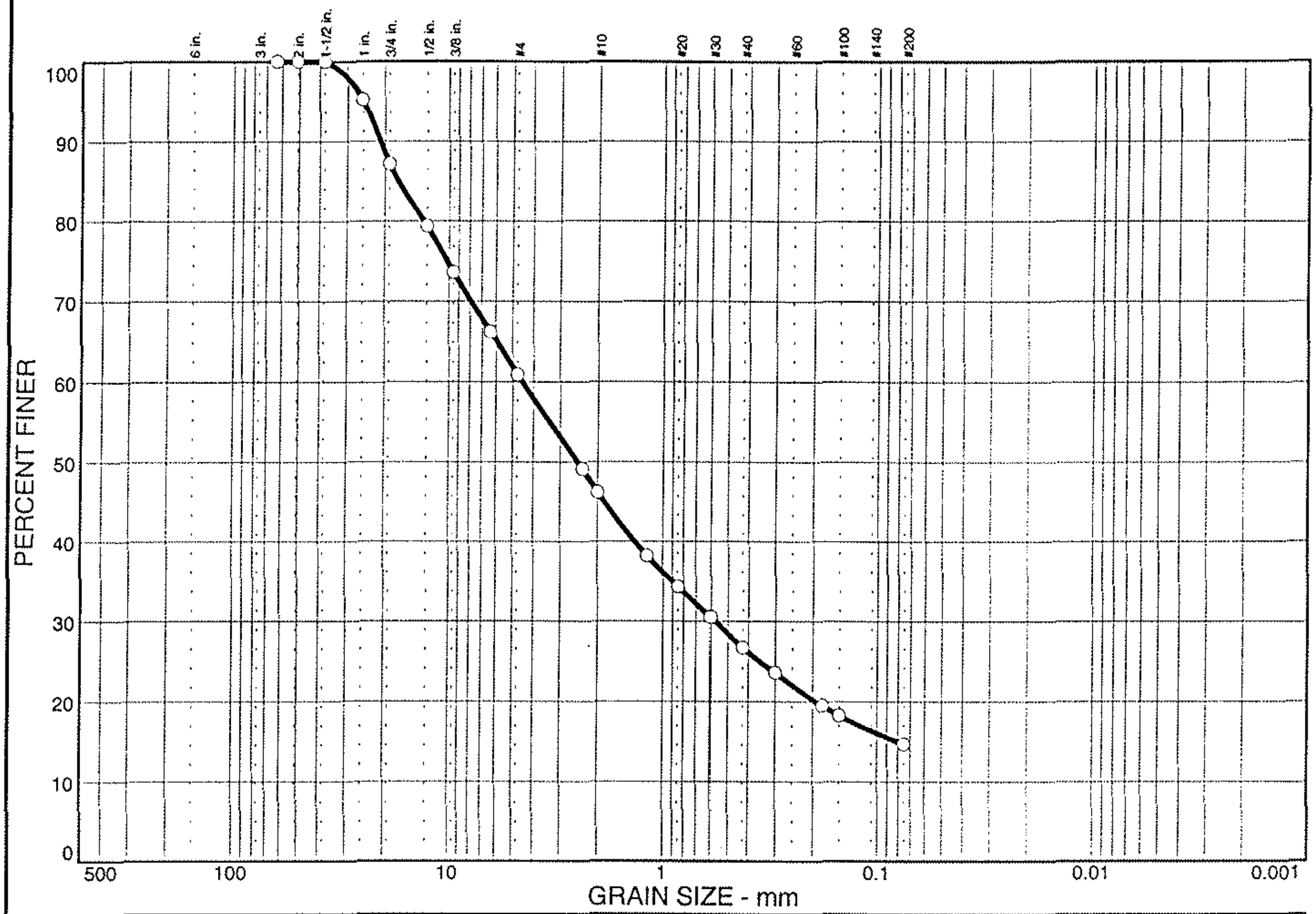
RMT, Inc.

Client:
Project: L.E. CARPENTER

Project No: 3868.27 **Figure:**

✓ 1[illegible]

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	39.1	46.2	14.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	95.2		
.75 in.	87.2		
.5 in.	79.4		
.375 in.	73.6		
.25 in.	66.2		
#4	60.9		
#8	49.1		
#10	46.2		
#16	38.2		
#20	34.3		
#30	30.5		
#40	26.7		
#50	23.6		
#80	19.5		
#100	18.3		
#200	14.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 17.3 D_{60}= 4.51 D_{50}= 2.49
D_{30}= 0.574 D_{15}= 0.0799 D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

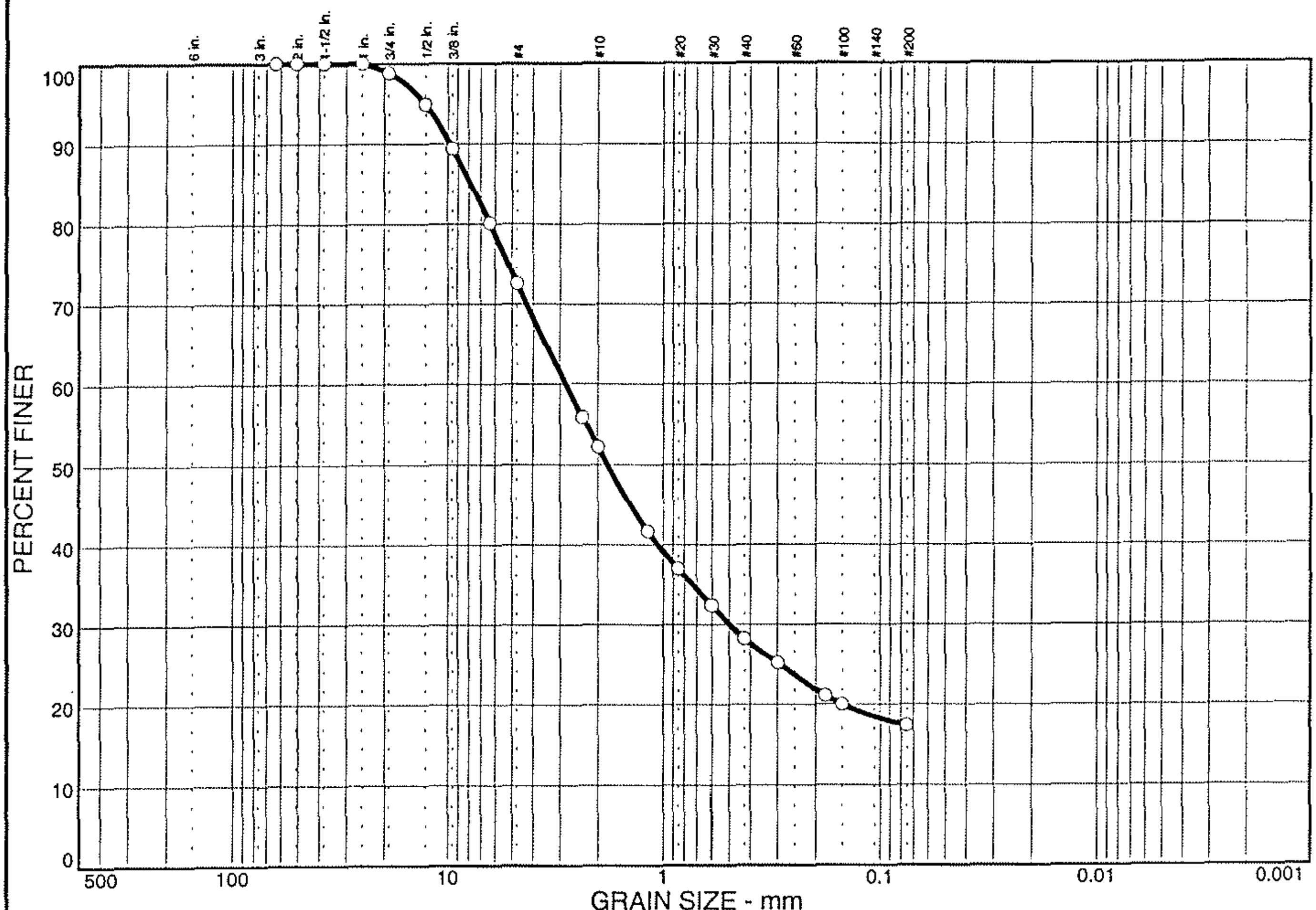
Remarks

Sample No.: GT-2-3, 8-10' **Source of Sample:** GT-2-~~3~~ 2 **Date:** 12-20-01
Location: **Elev./Depth:**

RMT, Inc.

Client:
Project: L.E. CARPENTER
Project No: 3868.27 **Figure:**

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	27.4	55.2	17.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	100.0		
.75 in.	98.8		
.5 in.	94.9		
.375 in.	89.4		
.25 in.	80.1		
#4	72.6		
#8	55.9		
#10	52.2		
#16	41.7		
#20	37.0		
#30	32.4		
#40	28.2		
#50	25.2		
#80	21.1		
#100	20.0		
#200	17.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 7.80 D_{60}= 2.83 D_{50}= 1.81
D_{30}= 0.498 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

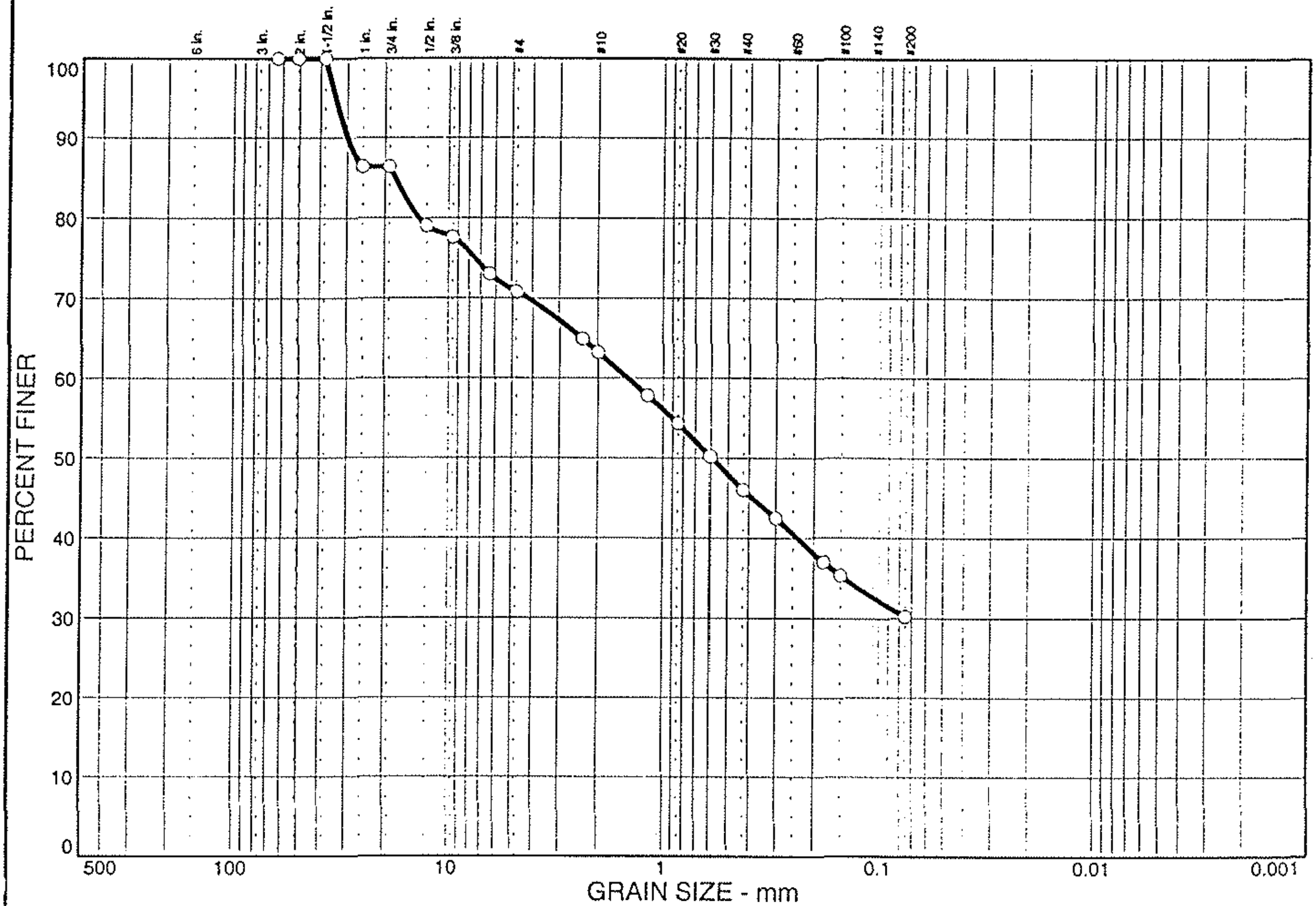
Remarks

Sample No.: GT-2-3, 10-11' **Source of Sample:** GT-2-3 **Date:** 12-20-01
Location: **Elev./Depth:**

RMT, Inc.

Client:
Project: L.E. CARPENTER
Project No: 3868.27 **Figure:**

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	29.2	40.6	30.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	86.4		
.75 in.	86.4		
.5 in.	79.0		
.375 in.	77.6		
.25 in.	73.0		
#4	70.8		
#8	64.9		
#10	63.2		
#16	57.8		
#20	54.3		
#30	50.2		
#40	46.0		
#50	42.5		
#80	37.0		
#100	35.3		
#200	30.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 17.9 D_{60}= 1.46 D_{50}= 0.590
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

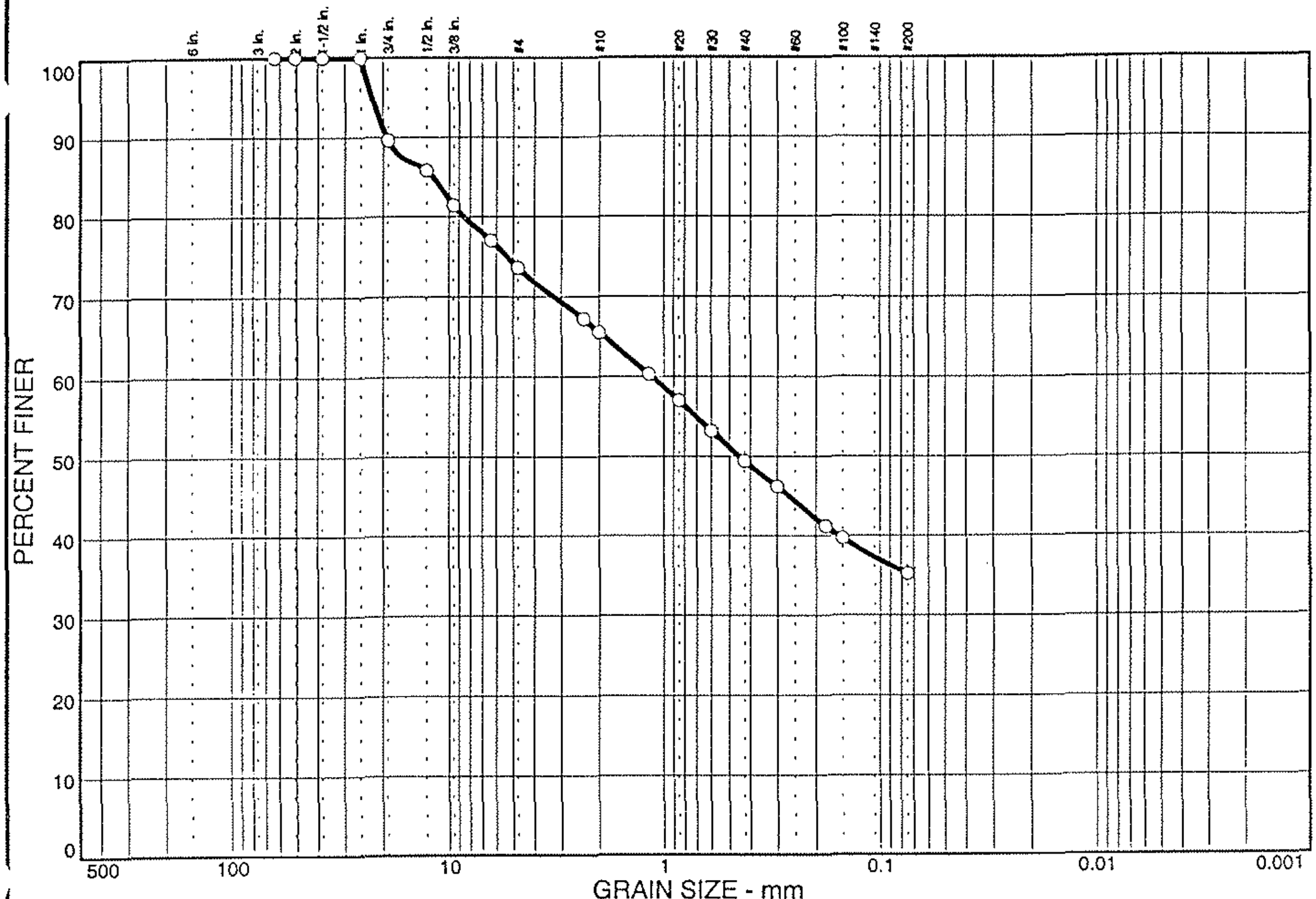
Remarks

Sample No.: GT-3-1, 18-24" Source of Sample: GT-3-1 Date: 12-20-01
Location: Elev./Depth:

RMT, Inc.

Client:
Project: L.E. CARPENTER
Project No: 3868.27 Figure:

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	26.4	38.4	35.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	100.0		
.75 in.	89.6		
.5 in.	85.8		
.375 in.	81.4		
.25 in.	77.0		
#4	73.6		
#8	67.2		
#10	65.5		
#16	60.3		
#20	57.0		
#30	53.2		
#40	49.4		
#50	46.2		
#80	41.2		
#100	39.7		
#200	35.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 11.9 D_{60}= 1.14 D_{50}= 0.451
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

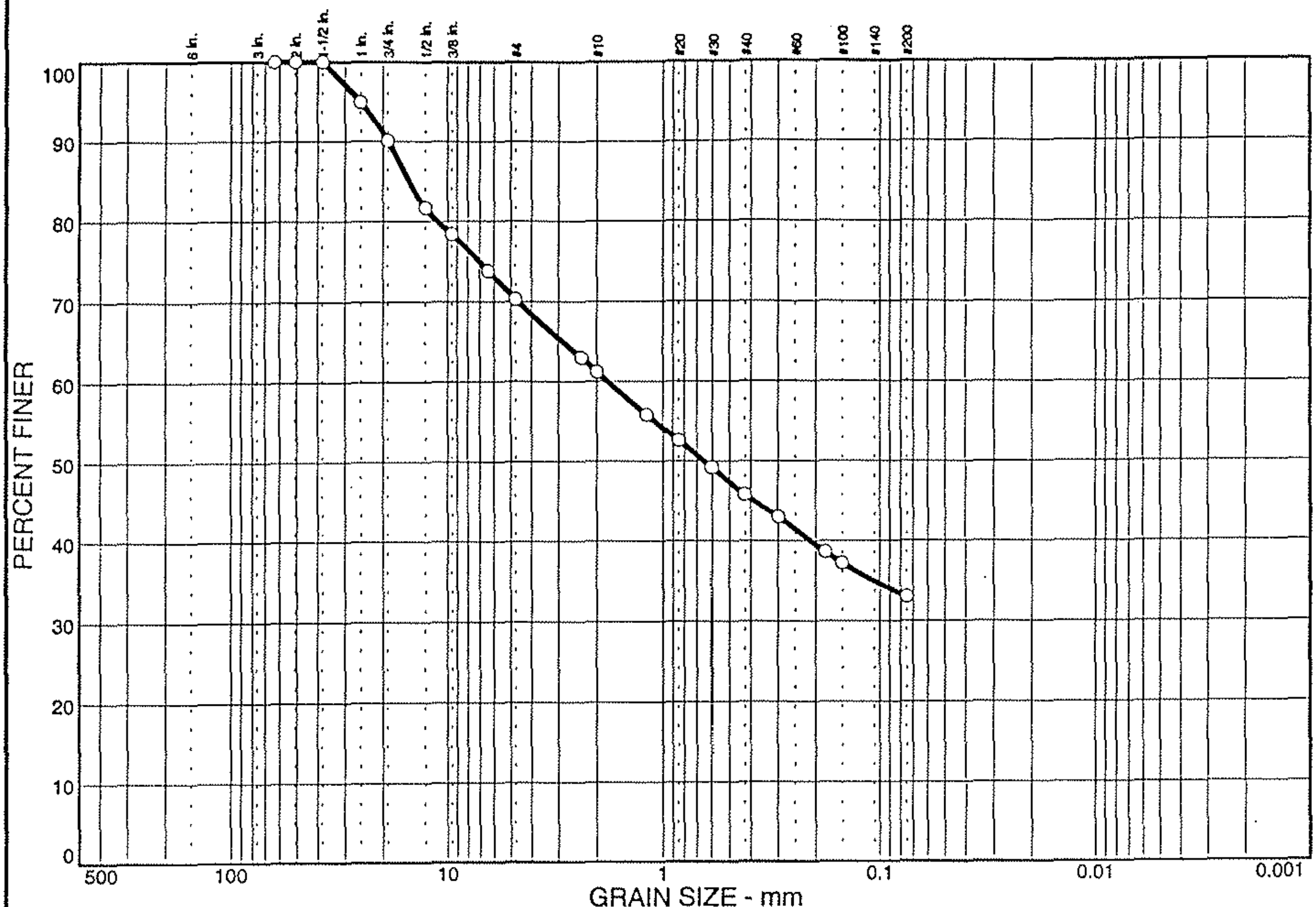
Remarks

Sample No.: GT-3-2, 5'-6' Source of Sample: GT-3-2 Date: 12-20-01
Location: Elev./Depth:

RMT, Inc.

Client:
Project: L.E. CARPENTER
Project No: 3868.27 Figure:

GRAIN SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	29.7	37.3	33.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5 in.	100.0		
2.0 in.	100.0		
1.5 in.	100.0		
1.0 in.	94.9		
.75 in.	90.1		
.5 in.	81.7		
.375 in.	78.4		
.25 in.	73.8		
#4	70.3		
#8	63.0		
#10	61.2		
#16	55.8		
#20	52.6		
#30	49.2		
#40	45.8		
#50	43.0		
#80	38.6		
#100	37.2		
#200	33.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 15.1 D_{60}= 1.79 D_{50}= 0.650
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

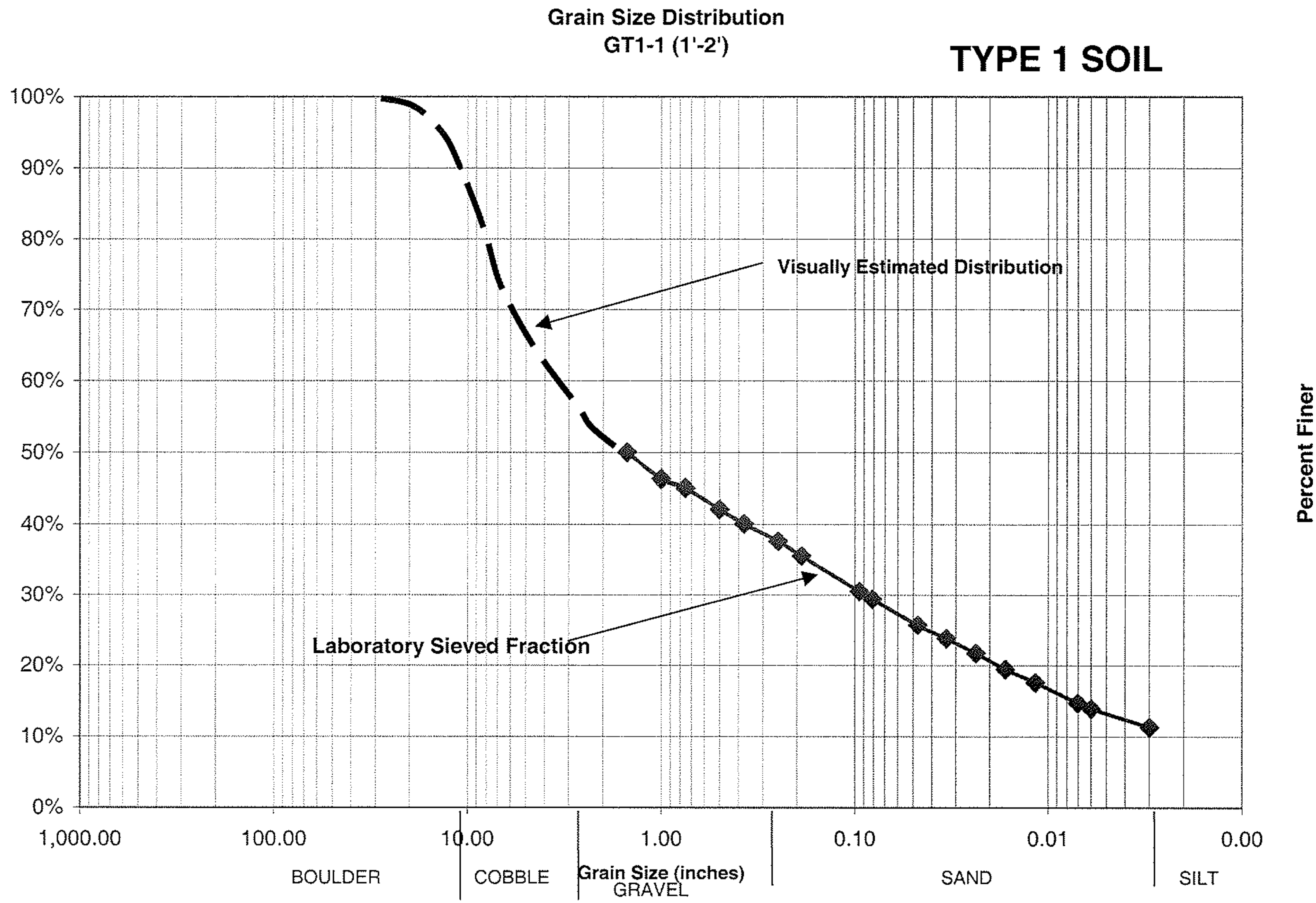
Remarks

Sample No.: GT-3-3, 8-8.5' Source of Sample: GT-3-3 Date: 12-20-01
Location: Elev./Depth:

RMT, Inc.

Client:
Project: L.E. CARPENTER
Project No: 3868.27 Figure:

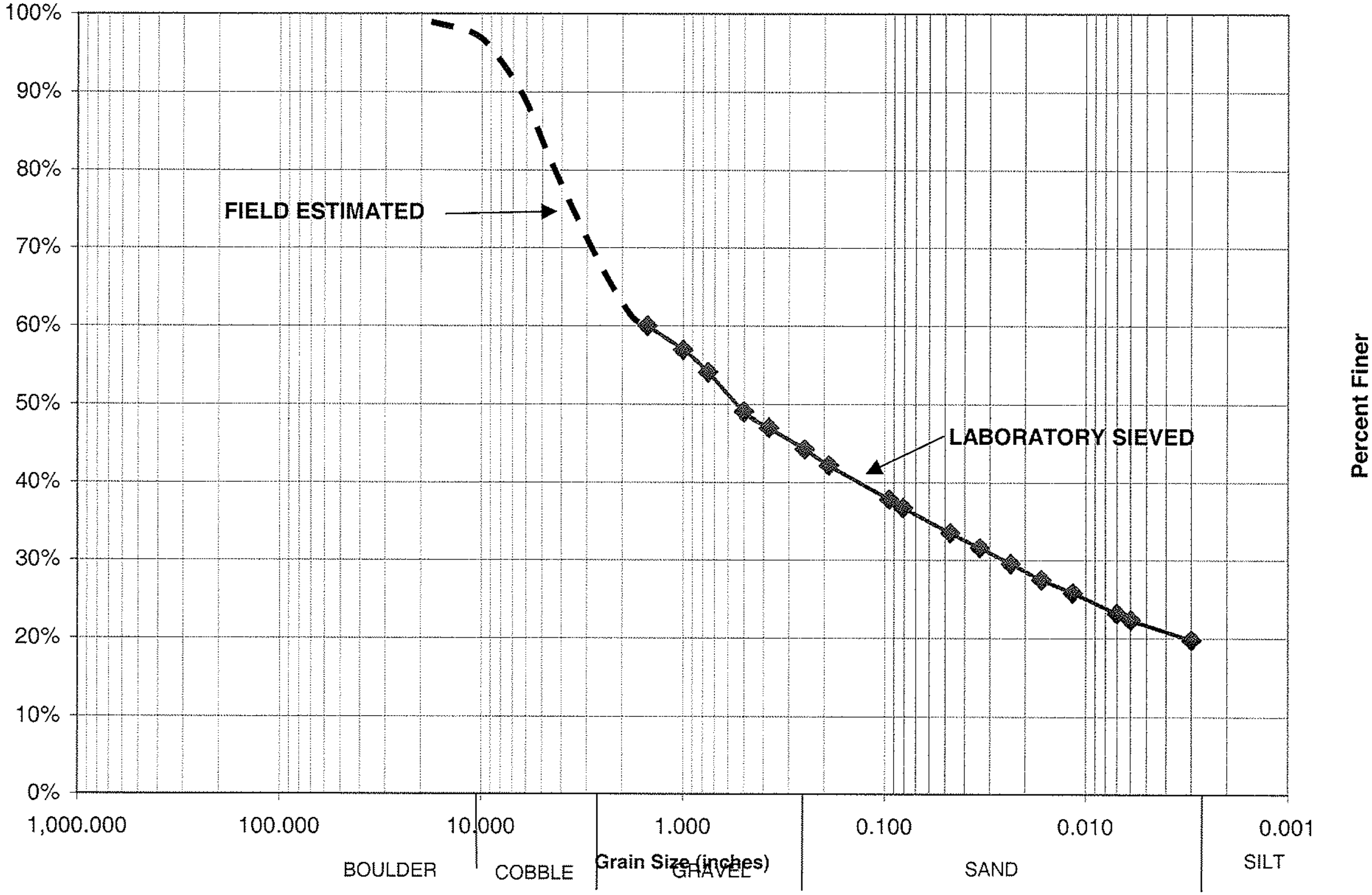
Appendix E
Soil Type – Estimated Grain-Size Distribution Curves

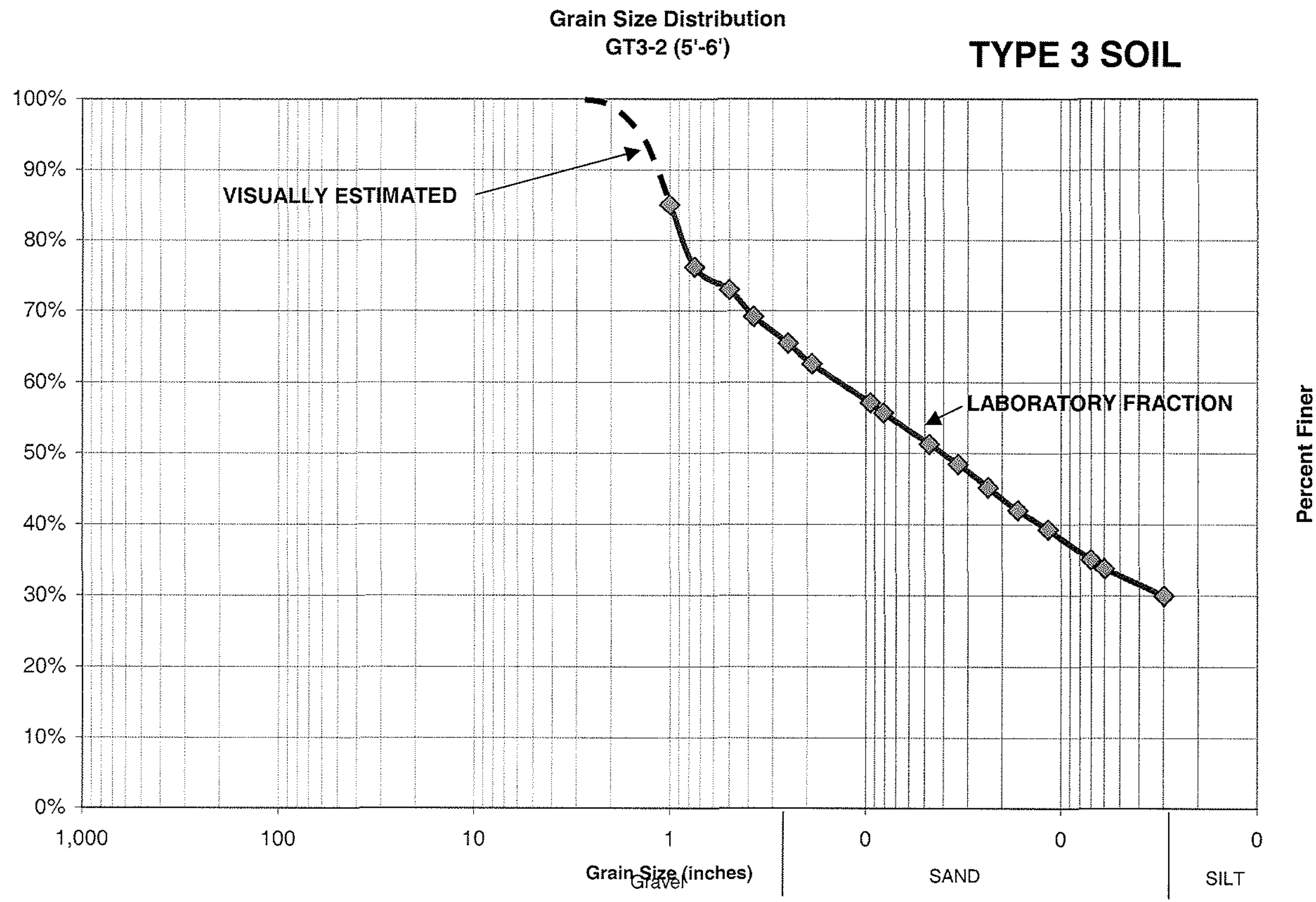


Grain Size Distribution
GT1-1 (1'-2')
TYPE 1 SOIL
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Visually Estimated Distribution
Laboratory Sieved Fraction
Percent Finer
1,000.00
100.00
10.00
1.00
0.10
0.01
0.00
Grain Size (inches)
BOULDER
COBBLE
GRAVEL
SAND
SILT

Grain Size Distribution
GT3-3 (8'-8.5')

TYPE 2 SOIL





Grain Size Distribution
GT3-2 (5'-6')
TYPE 3 SOIL
VISUALLY ESTIMATED
LABORATORY FRACTION
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1,000
100
10
1
0
0
0
Grain Size (inches)
Gravel
SAND
SILT
Percent Finer

Appendix F
Analytical Results from Severn Trent Laboratories

The Action Levels listed reflect current STL Edison knowledge of the standards and are intended as general guidance for the user. Please consult appropriate regulations and cleanup standards for your specific application.

Sample ID	New Jersey Residential	lew Jersey Non-Residenti	New Jersey Impact to	New Jersey Higher of	P1	P2	P3
Lab Sample Number	Direct Contact	Direct Contact	Ground Water	PQLs and	320719	320720	320721
Sampling Date	Soil Cleanup	Soil Cleanup	Soil Cleanup	Ground Water Quality	12/10/01	12/11/01	12/10/01
Matrix	Criteria (ug/kg)	Criteria (ug/kg)	Criteria (ug/kg)	Criteria (ug/l)	SOLID	SOLID	SOLID
Dilution Factor					10000.0	500.0	5000.0
Units					ug/Kg	ug/Kg	ug/Kg
VOLATILE COMPOUNDS (GC/MS)							
Chloromethane	520,000	1,000,000	10,000	30	120000 U	6700 U	70000
Bromomethane	79,000	1,000,000	1,000	10	120000 U	6700 U	70000
VinylChloride	2,000	7,000	10,000	5	120000 U	6700 U	70000
Chloroethane	NA	NA	NA	NA	120000 U	6700 U	70000
MethyleneChloride	49,000	210,000	1,000	3^	74000 U	4000 U	42000
Acetone	1,000,000	1,000,000	100,000	700	120000 U	6700 U	70000
CarbonDisulfide	NA	NA	NA	NA	120000 U	6700 U	70000
1,1-Dichloroethene	8,000	150,000	10,000	2	49000 U	2700 U	28000
1,1-Dichloroethane	570,000	1,000,000	10,000	50^	120000 U	6700 U	70000
trans-1,2-Dichloroethene	1,000,000	1,000,000	50,000	100	120000 U	6700 U	70000
cis-1,2-Dichloroethene	79,000	1,000,000	1,000	70^	120000 U	6700 U	70000
Chloroform	19,000	28,000	1,000	6	120000 U	6700 U	70000
1,2-Dichloroethane	6,000	24,000	1,000	2	49000 U	2700 U	28000
2-Butanone	1,000,000	1,000,000	50,000	300	120000 U	6700 U	70000
1,1,1-Trichloroethane	210,000	1,000,000	50,000	30	120000 U	6700 U	70000
CarbonTetrachloride	2,000	4,000	1,000	2	49000 U	2700 U	28000
Bromodichloromethane	11,000	46,000	1,000	1	25000 U	1300 U	14000
1,2-Dichloropropane	10,000	43,000	NA	1	25000 U	1300 U	14000
(1) cis-1,3-Dichloropropene	4,000	5,000	1,000	NA	120000 U	6700 U	70000
Trichloroethene	23,000	54,000	1,000	1	25000 U	1300 U	14000
Dibromochloromethane	110,000	1,000,000	1,000	10	120000 U	6700 U	70000
1,1,2-Trichloroethane	22,000	420,000	1,000	3	74000 U	4000 U	42000
Benzene	3,000	13,000	1,000	1	25000 U	1300 U	14000
(1) trans-1,3-Dichloropropene	4,000	5,000	1,000	NA	120000 U	6700 U	70000
Bromoform	86,000	370,000	1,000	4	99000 U	5400 U	56000
4-Methyl-2-Pentanone	1,000,000	1,000,000	50,000	400	120000 U	6700 U	70000
2-Hexanone	NA	NA	NA	NA	120000 U	6700 U	70000
Tetrachloroethene	4,000	6,000	1,000	1	25000 U	1300 U	14000
1,1,2,2-Tetrachloroethane	34,000	70,000	1,000	1^	25000 U	1300 U	14000
Toluene	1,000,000	1,000,000	500,000	1,000	120000 U	6700 U	70000
Chlorobenzene	37,000	680,000	1,000	50^	120000 U	6700 U	70000
Ethylbenzene	1,000,000	1,000,000	100,000	700	1100000	18000	670000
Styrene	23,000	97,000	100,000	100	120000 U	6700 U	70000
Xylene(Total)	410,000	1,000,000	67,000	1000^	2400000	140000	2000000
Total Confident Conc. VOAs (s)					3500000	158000	2670000

(1) Values listed reflect the combined standards for the cis and trans isomers of 1,3-Dichloropropene.
^ Value is a revision to the Class IIA ground water quality standard based upon the November 18, 1996 Safe Drinking Water Act maximum contaminant level changes and the February 5, 1997 policy mem

Qualifiers
U - The compound was not detected at the indicated concentration.
J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero.
The concentration given is an approximate value.

Checked By: _____
___ OK
___ Make Corrections

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
NR - Not analyzed.

Checked By: ______
___ OK
___ Make Corrections

		New Jersey Residential Direct Contact Soil Cleanup Criteria (ug/kg)	lew Jersey Non-Residenti Direct Contact Soil Cleanup Criteria (ug/kg)	New Jersey Impact to Ground Water Soil Cleanup Criteria (ug/kg)	New Jersey Higher of PQLs and Ground Water Quality Criteria (ug/l)			
	Sample ID					P1	P2	P3
	Lab Sample Number					320719	320720	320721
	Sampling Date					12/10/01	12/11/01	12/10/01
	Matrix					SOLID	SOLID	SOLID
	Dilution Factor					50.0	100.0	20.0
	Units					ug/Kg	ug/Kg	ug/Kg
	SEMIVOLATILE COMPOUNDS (GC/MS)							
	Phenol	10,000,000	10,000,000	50,000	4,000	1400000 U	3000000 U	570000
	2-Chlorophenol	280,000	5,200,000	10,000	40	1400000 U	3000000 U	570000
	2-Methylphenol	2,800,000	10,000,000	NA	NA	1400000 U	3000000 U	570000
	4-Methylphenol	2,800,000	10,000,000	NA	NA	1400000 U	3000000 U	570000
	2-Nitrophenol	NA	NA	NA	NA	1400000 U	3000000 U	570000
	2,4-Dimethylphenol	1,100,000	10,000,000	10,000	100	1400000 U	3000000 U	570000
	2,4-Dichlorophenol	170,000	3,100,000	10,000	20	1400000 U	3000000 U	570000
	4-Chloro-3-methylphenol	10,000,000	10,000,000	100,000	NA	1400000 U	3000000 U	570000
	2,4,6-Trichlorophenol	62,000	270,000	10,000	20	1400000 U	3000000 U	570000
	2,4,5-Trichlorophenol	5,600,000	10,000,000	50,000	700	1400000 U	3000000 U	570000
	2,4-Dinitrophenol	110,000	2,100,000	10,000	40	5600000 U	12000000 U	2300000
	4-Nitrophenol	NA	NA	NA	NA	5600000 U	12000000 U	2300000
	4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	5600000 U	12000000 U	2300000
	Pentachlorophenol	6,000	24,000	100,000	1	5600000 U	12000000 U	2300000
	bis(2-Chloroethyl)ether	660	3,000	10,000	10	140000 U	300000 U	57000
	1,3-Dichlorobenzene	5,100,000	10,000,000	100,000	600	1400000 U	3000000 U	570000
	1,4-Dichlorobenzene	570,000	10,000,000	100,000	75	1400000 U	3000000 U	570000
	1,2-Dichlorobenzene	5,100,000	10,000,000	50,000	600	1400000 U	3000000 U	570000
	bis(2-chloroisopropyl)ether	2,300,000	10,000,000	10,000	300	1400000 U	3000000 U	570000
	N-Nitroso-di-n-propylamine	660	660	10,000	20	140000 U	300000 U	57000
	Hexachloroethane	6,000	100,000	100,000	10	140000 U	300000 U	57000
	Nitrobenzene	28,000	520,000	10,000	10	140000 U	300000 U	57000
	Isophorone	1,100,000	10,000,000	50,000	100	1400000 U	3000000 U	570000
	bis(2-Chloroethoxy)methane	NA	NA	NA	NA	1400000 U	3000000 U	570000
	1,2,4-Trichlorobenzene	68,000	1,200,000	100,000	9	140000 U	300000 U	57000
	Naphthalene	230,000	4,200,000	100,000	300^	1400000 U	3000000 U	570000
	4-Chloroaniline	230,000	4,200,000	NA	NA	1400000 U	3000000 U	570000
	Hexachlorobutadiene	1,000	21,000	100,000	1	280000 U	600000 U	110000
	2-Methylnaphthalene	NA	NA	NA	NA	1400000 U	3000000 U	570000
	Hexachlorocyclopentadiene	400,000	7,300,000	100,000	50	1400000 U	3000000 U	570000
	2-Chloronaphthalene	NA	NA	NA	NA	1400000 U	3000000 U	570000
	2-Nitroaniline	NA	NA	NA	NA	2800000 U	6000000 U	1100000
	Dimethylphthalate	10,000,000	10,000,000	50,000	NA	1400000 U	3000000 U	570000
	Acenaphthylene	NA	NA	NA	NA	1400000 U	3000000 U	570000
(1)	2,6-Dinitrotoluene	1,000	4,000	10,000	NA	280000 U	600000 U	110000
	3-Nitroaniline	NA	NA	NA	NA	2800000 U	6000000 U	1100000
	Acenaphthene	3,400,000	10,000,000	100,000	400	1400000 U	3000000 U	570000
	Dibenzofuran	NA	NA	NA	NA	1400000 U	3000000 U	570000
(1)	2,4-Dinitrotoluene	1,000	4,000	10,000	10	280000 U	600000 U	110000
	Diethylphthalate	10,000,000	10,000,000	50,000	5,000	1400000 U	3000000 U	570000
	4-Chlorophenyl-phenylether	NA	NA	NA	NA	1400000 U	3000000 U	570000
	Fluorene	2,300,000	10,000,000	100,000	300	1400000 U	3000000 U	570000
	4-Nitroaniline	NA	NA	NA	NA	2800000 U	6000000 U	1100000
	N-Nitrosodiphenylamine	140,000	600,000	100,000	20	1400000 U	3000000 U	570000
	4-Bromophenyl-phenylether	NA	NA	NA	NA	1400000 U	3000000 U	570000
	Hexachlorobenzene	660	2,000	100,000	10	140000 U	300000 U	57000
	Phenanthrene	NA	NA	NA	NA	1400000 U	3000000 U	570000

Checked By: _____
__ OK
__ Make Corrections

Anthracene	10,000,000	10,000,000	100,000	2,000	1400000 U	3000000 U	570000
Carbazole	NA	NA	NA	NA	1400000 U	3000000 U	570000
Di-n-butylphthalate	5,700,000	10,000,000	100,000	900	1400000 U	3000000 U	570000
Fluoranthene	2,300,000	10,000,000	100,000	300	1400000 U	3000000 U	570000
Pyrene	1,700,000	10,000,000	100,000	200	1400000 U	3000000 U	570000
Butylbenzylphthalate	1,100,000	10,000,000	100,000	100	1400000 U	3000000 U	570000
3,3'-Dichlorobenzidine	2,000	6,000	100,000	60	2800000 U	6000000 U	1100000
Benzo(a)anthracene	900	4,000	500,000	NA	140000 U	300000 U	57000
Chrysene	9,000	40,000	500,000	NA	1400000 U	3000000 U	570000
bis(2-Ethylhexyl)phthalate	49,000	210,000	100,000	30	17000000	9400000	7900000
Di-n-octylphthalate	1,100,000	10,000,000	100,000	100	1400000 U	3000000 U	570000
Benzo(b)fluoranthene	900	4,000	50,000	NA	140000 U	300000 U	57000
Benzo(k)fluoranthene	900	4,000	500,000	NA	140000 U	300000 U	57000
Benzo(a)pyrene	660	660	100,000	NA	140000 U	300000 U	57000
Indeno(1,2,3-cd)pyrene	900	4,000	500,000	NA	140000 U	300000 U	57000
Dibenz(a,h)anthracene	660	660	100,000	NA	140000 U	300000 U	57000
Benzo(g,h,i)perylene	NA	NA	NA	NA	1400000 U	3000000 U	570000
Total Confident Conc. BNAs (s)					17000000	9400000	7900000

(1) Values listed reflect the combined standards for the 2,4/2,6-Dinitrotoluene mixture.
^ Value is a revision to the Class IIA ground water quality standard based upon the November 18, 1996 Safe Drinking Water Act maximum contaminant level changes and the February 5, 1997 policy mem

Qualifiers
U - The compound was not detected at the indicated concentration.
J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
NR - Not analyzed.

Checked By: ____
___ OK
___ Make Corrections

Sample ID Lab Sample Number Sampling Date Matrix Dilution Factor Units	New Jersey Residential Direct Contact Soil Cleanup Criteria (ug/kg)	lew Jersey Non-Residenti: Direct Contact Soil Cleanup Criteria (ug/kg)	New Jersey Impact to Ground Water Soil Cleanup Criteria (ug/kg)	New Jersey Higher of PQLs and Ground Water Quality Criteria (ug/l)	P1 320719 12/10/01 SOLID 1.0 ug/kg	P2 320720 12/11/01 SOLID 1.0 ug/kg	P3 320721 12/10/01 SOLID 1.0 ug/kg
PESTICIDES/PCBs							
(1) Aroclor-1016	490	2,000	50,000	0.5	560 U	610 U	580
(1) Aroclor-1221	490	2,000	50,000	0.5	560 U	610 U	580
(1) Aroclor-1232	490	2,000	50,000	0.5	560 U	610 U	580
(1) Aroclor-1242	490	2,000	50,000	0.5	560 U	610 U	580
(1) Aroclor-1248	490	2,000	50,000	0.5	560 U	610 U	580
(1) Aroclor-1254	490	2,000	50,000	0.5	560 U	7600	580
(1) Aroclor-1260	490	2,000	50,000	0.5	560 U	610 U	580
(1) Aroclor-1262	NA	NA	NA	NA	560 U	610 U	580
(1) Aroclor-1268	NA	NA	NA	NA	560 U	610 U	580

(1) Values listed reflect the combined standards for "Total PCBs"
(2) Soil Cleanup criteria is provided for "Endosulfan" without specification if it is for Endosulfan I or Endosulfan II.

Qualifiers
U - The compound was not detected at the indicated concentration.
J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%
* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.
NR - Not analyzed.

Checked By: ____
__ OK
__ Make Corrections

Sample ID Lab Sample Number Sampling Date Matrix Dilution Factor Units	New Jersey Residential Direct Contact Soil Cleanup Criteria (mg/kg)	lew Jersey Non-Residenti Direct Contact Soil Cleanup Criteria (mg/kg)	New Jersey Impact to Ground Water Soil Cleanup Criteria (mg/kg)	New Jersey Higher of PQLs and Ground Water Quality Criteria (ug/l)	P1 320719 12/10/01 SOLID NA mg/kg		P2 320720 12/11/01 SOLID NA mg/kg		P3 320721 12/10/01 SOLID NA mg/kg
METALS									
Arsenic	20	20	NA	8	2.6		5.0		2.3
Barium	700	47,000	NA	2,000	30.1	B	108		22.7
Cadmium	39	100	NA	4	0.21	B	11.6		0.26
Chromium	NA	NA	NA	100	10.0		29.6		8.9
Lead	400	600	NA	10	8.8		205		6.3
Mercury	14	270	NA	2	0.02	B	0.10		0.02
Selenium	63	3,100	NA	50	0.94	U	2.2		0.96
Silver	110	4,100	NA	NA	0.31	U	0.31	U	0.32

Qualifiers
U - The compound was not detected at the indicated concentration.
B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.
N - The spiked sample recovery is not within control limits.
NR - Not analyzed.

Checked By: _____
__ OK
__ Make Corrections

The Action Levels listed reflect
guidance for the user. Please c

Sample ID		TripBlank
Lab Sample Number		320722
Sampling Date		12/10/01
Matrix		SOLID
Dilution Factor		50.0
Units		ug/Kg
VOLATILE COMPOUNDS (GC/MS)		
Chloromethane	U	620 U
Bromomethane	U	620 U
VinylChloride	U	620 U
Chloroethane	U	620 U
MethyleneChloride	U	380 U
Acetone	U	620 U
CarbonDisulfide	U	620 U
1,1-Dichloroethene	U	250 U
1,1-Dichloroethane	U	620 U
trans-1,2-Dichloroethene	U	620 U
cis-1,2-Dichloroethene	U	620 U
Chloroform	U	620 U
1,2-Dichloroethane	U	250 U
2-Butanone	U	620 U
1,1,1-Trichloroethane	U	620 U
CarbonTetrachloride	U	250 U
Bromodichloromethane	U	120 U
1,2-Dichloropropane	U	120 U
(1) cis-1,3-Dichloropropene	U	620 U
Trichloroethene	U	120 U
Dibromochloromethane	U	620 U
1,1,2-Trichloroethane	U	380 U
Benzene	U	120 U
(1) trans-1,3-Dichloropropene	U	620 U
Bromoform	U	500 U
4-Methyl-2-Pentanone	U	620 U
2-Hexanone	U	620 U
Tetrachloroethene	U	120 U
1,1,2,2-Tetrachloroethane	U	120 U
Toluene	U	620 U
Chlorobenzene	U	620 U
Ethylbenzene		500 U
Styrene	U	620 U
Xylene(Total)		620 U
Total Confident Conc. VOAs (s)		0

(1) Values listed reflect the com
^ Value is a revision to the Claso issued by Assistant Commissioner R. Gimello.

Qualifiers
U - The compound was not detected at the i
J - Data indicates the presence of a compo
The concentration given is an approxima

Checked By: ______
___ OK
___ Make Corrections

B - The analyte was found in the laboratory
NR - Not analyzed.

Checked By: ______
___ OK
___ Make Corrections

Sample ID			TripBlank
Lab Sample Number			320722
Sampling Date			12/10/01
Matrix			SOLID
Dilution Factor			
Units			
SEMIVOLATILE COMPOUNDS (GC/M			
	Phenol	U	NR
	2-Chlorophenol	U	NR
	2-Methylphenol	U	NR
	4-Methylphenol	U	NR
	2-Nitrophenol	U	NR
	2,4-Dimethylphenol	U	NR
	2,4-Dichlorophenol	U	NR
	4-Chloro-3-methylphenol	U	NR
	2,4,6-Trichlorophenol	U	NR
	2,4,5-Trichlorophenol	U	NR
	2,4-Dinitrophenol	U	NR
	4-Nitrophenol	U	NR
	4,6-Dinitro-2-methylphenol	U	NR
	Pentachlorophenol	U	NR
	bis(2-Chloroethyl)ether	U	NR
	1,3-Dichlorobenzene	U	NR
	1,4-Dichlorobenzene	U	NR
	1,2-Dichlorobenzene	U	NR
	bis(2-chloroisopropyl)ether	U	NR
	N-Nitroso-di-n-propylamine	U	NR
	Hexachloroethane	U	NR
	Nitrobenzene	U	NR
	Isophorone	U	NR
	bis(2-Chloroethoxy)methane	U	NR
	1,2,4-Trichlorobenzene	U	NR
	Naphthalene	U	NR
	4-Chloroaniline	U	NR
	Hexachlorobutadiene	U	NR
	2-Methylnaphthalene	U	NR
	Hexachlorocyclopentadiene	U	NR
	2-Chloronaphthalene	U	NR
	2-Nitroaniline	U	NR
	Dimethylphthalate	U	NR
	Acenaphthylene	U	NR
(1)	2,6-Dinitrotoluene	U	NR
	3-Nitroaniline	U	NR
	Acenaphthene	U	NR
	Dibenzofuran	U	NR
(1)	2,4-Dinitrotoluene	U	NR
	Diethylphthalate	U	NR
	4-Chlorophenyl-phenylether	U	NR
	Fluorene	U	NR
	4-Nitroaniline	U	NR
	N-Nitrosodiphenylamine	U	NR
	4-Bromophenyl-phenylether	U	NR
	Hexachlorobenzene	U	NR
	Phenanthrene	U	NR

Checked By: _____
___ OK
___ Make Corrections

Anthracene	U	NR
Carbazole	U	NR
Di-n-butylphthalate	U	NR
Fluoranthene	U	NR
Pyrene	U	NR
Butylbenzylphthalate	U	NR
3,3'-Dichlorobenzidine	U	NR
Benzo(a)anthracene	U	NR
Chrysene	U	NR
bis(2-Ethylhexyl)phthalate		NR
Di-n-octylphthalate	U	NR
Benzo(b)fluoranthene	U	NR
Benzo(k)fluoranthene	U	NR
Benzo(a)pyrene	U	NR
Indeno(1,2,3-cd)pyrene	U	NR
Dibenz(a,h)anthracene	U	NR
Benzo(g,h,i)perylene	U	NR
Total Confident Conc. BNAs (s)		

(1) Values listed reflect the com

^ Value is a revision to the Claso issued by Assistant Commissioner R. Gimello.

Qualifiers

U - The compound was not detected at the i

J - Data indicates the presence of a compo

The concentration given is an approxima

B - The analyte was found in the laboratory

NR - Not analyzed.

Checked By: ______

___ OK

___ Make Corrections

Sample ID		TripBlank
Lab Sample Number		320722
Sampling Date		12/10/01
Matrix		SOLID
Dilution Factor		
Units		
PESTICIDES/PCBs		
(1) Aroclor-1016	U	NR
(1) Aroclor-1221	U	NR
(1) Aroclor-1232	U	NR
(1) Aroclor-1242	U	NR
(1) Aroclor-1248	U	NR
(1) Aroclor-1254	U	NR
(1) Aroclor-1260	U	NR
(1) Aroclor-1262	U	NR
(1) Aroclor-1268	U	NR

(1) Values listed reflect the com
(2) Soil Cleanup criteria is provi

Qualifiers
- U - The compound was not detected at the i
- J - Data indicates the presence of a compo
  The concentration given is an approxima
- B - The analyte was found in the laboratory
- P - For dual column analysis, the percent di
- * - For dual column analysis, the lowest qu
- NR - Not analyzed.

Checked By: ______
___ OK
___ Make Corrections

Sample ID		TripBlank
Lab Sample Number		320722
Sampling Date		12/10/01
Matrix		SOLID
Dilution Factor		
Units		
METALS		
Arsenic		NR
Barium	B	NR
Cadmium	B	NR
Chromium		NR
Lead		NR
Mercury	B	NR
Selenium	U	NR
Silver	U	NR

Qualifiers
U - The compound was not detected at the i
B - Reported value is less than the Method
N - The spiked sample recovery is not withi
NR - Not analyzed.

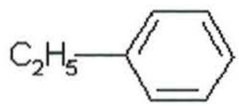
Checked By: ______
___ OK
___ Make Corrections

Appendix G
Temperature Dependent Properties for Ethylbenzene, Xylenes and DEHP

Pure Component Properties

[Instruction] Click on units to view values in other units of measure !
* NA : Not Available (No data found)

Component Names and Formula



ID	653
Name	ETHYLBENZENE
	ETHYLBENZOL
	PHENYLETHANE
	AETHYLBENZOL
Formula	C8H10
	(C(C2H5)CHCHCHCHCH)
CA No.	100-41-4

Basic Properties

Molecular Wt. (WT)	1.06167E+02		
Normal Boiling Point Temp. (TB)	4.09340E+02	K	units
Freezing Point Temp. (TF)	1.78200E+02	K	units
Triple Point Temp. (TT)	NA		
Triple Point Press. (PT)	NA		
Critical Temperature. (TC)	6.17150E+02	K	units
Critical Pressure (PC)	3.60900E+03	kPa	units
Critical Volume (VC)	3.74000E-01	m^3/kg-mol	units
Critical Compressibility (ZC)	2.63046E-01		
Accentric Factor (ACCF)	3.02000E-01		

Temperature Dependent Properties

Vapor Pressure	Coeff.s Available	coefficients
Heat Capacity (Ideal Gas)	Coeff.s Available	coefficients
Heat Capacity (Liquid)	Coeff.s Available	coefficients
Viscosity (Gas, Low P)	Coeff.s Available	coefficients
Viscosity (Liquid)	Coeff.s Available	coefficients
Themal Conductivity (Gas, Low P)	Coeff.s Available	coefficients
Themal Conductivity (Liquid)	Coeff.s Available	coefficients
Surface Tension	NA	

Liquid Properties

Partial Molar Volume (VOLP)	1.230700E-01	m^3/kg-mol	units
Solubility Parameters (SOLP)	1.797775E+04	(J/cm^3)^0.5	units
SRK accentric factor (WSRK)	3.048000E-01		
COSTALD Characteristic Voluem (VSTAR)	3.702000E-01	m^3/kg-mol	units
Rackett parameter (ZRA)	2.626000E-01		
Aniline Point (ANP)	NA		

Enthalpy Data

H(formation,ideal gas)at 25 C	2.981000E+04	kJ/kg-mol	units
G(formation,ideal gas) at 25 C	1.307000E+05	kJ/kg-mol	units
Heat of Combustion, Gross form (HCB1)	4.564870E+06	kJ/kg-mol	units
Heat of Combustion, Net form (HCB2)	4.344792E+06	kJ/kg-mol	units

Molecular Properties

Van der Waals Volume (VDWV)	NA		
Van der Waals Area (VDWA)	NA		
UNIQUAC Ri Parameter (RI)	4.597200E+00		
UNIQUAC Qi Parameter (QI)	3.508000E+00		
Dipole Moment (DM)	4.000000E-01	debye	units
Radius of Gyration (GYRAD)	3.821000E+00		

Single Temperature Properties

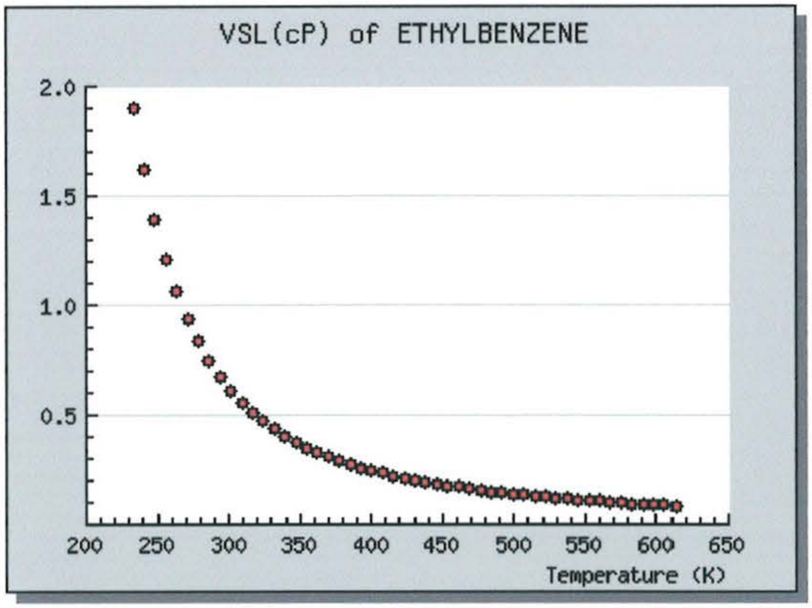
Liquid Density (DENL)	8.166379E-03	g-mol/cm^3	units
Temperature of DENL (TDENL)	2.930000E+02	K	units
Heat of Vaporizaiton (HVAP)	3.556400E+04	kJ/kg-mol	units
Temperature of HVAP (THVAP)	4.092000E+02	K	units
Surface Tension (SRF)	2.929000E+01	dyn/cm	units
Temperature of SRF (TSRF)	2.932000E+02	K	units
Dielectric Constant (DIEL)	NA		
Temperature of DIEL (TDIEL)	NA		
Refractive Index (RFI)	1.493200E+00		
Temperature of RFI (TRFI)	2.981500E+02	K	units

Hazardous Data

Lower Flammability Limi(FLL)	1.000000E+00	% in Air	
Upper Flammability Limit(FLU)	6.700000E+00	% in Air	
Flash Point (Open Cup Method)	2.881500E+02	K	units
Flash Point (Closed Cup Method)	2.998167E+02	K	units
Autoignition Temperature (AIGT)	7.331500E+02	K	units
NFPA Rating (Health)	2		
NFPA Rating (Fire)	3		
NFPA Rating (Safety)	2		

Temperature Dependent Properties

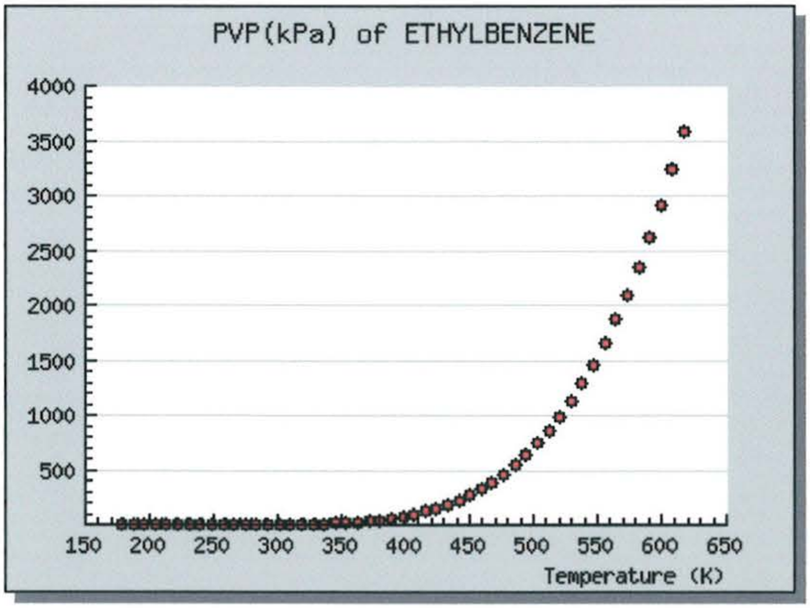
[VSL] Liquid Viscosity of ETHYLBENZENE



Equation Name	Quasipolynomial Equation	
Equation	ln (VISL) = A + B/T + C*T + D*T^2 where T in K and VISL in cP.	
Coefficient A	-6.106	
Coefficient B	1353	
Coefficient C	.005112	
Coefficient D	-4.552E-06	
Coefficient E		
Coefficient F		
Coefficient G		
T range , from	233.15	K
T range , to	613.15	K

Temperature Dependent Properties

[PVP] Vapor pressure of ETHYLBENZENE

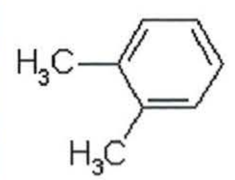


Equation Name	KDB Correlation Equation	
Equation	ln(Pvp) = A*ln(T) + B/T + C + D*T^2 where Pvp in kPa, T in K	
Coefficient A	-9.553983E+00	
Coefficient B	-7.638082E+03	
Coefficient C	7.979371E+01	
Coefficient D	5.653180E-06	
Coefficient E		
Coefficient F		
Coefficient G		
T range , from	178.15	K
T range , to	617.17	K

Pure Component Properties

[Instruction] Click on units to view values in other units of measure !
* NA : Not Available (No data found)

Component Names and Formula



ID	654
Name	O-XYLENE
	1,2-DIMETHYLBENZENE
	O-DIMETHYLBENZENE
	O-METHYLTOLUENE
Formula	C8H10
	(C(CH3)C(CH3)CHCHCHCH)
CA No.	95-47-6

Basic Properties

Molecular Wt. (WT)	1.06167E+02		
Normal Boiling Point Temp. (TB)	4.17600E+02	K	units
Freezing Point Temp. (TF)	2.47900E+02	K	units
Triple Point Temp. (TT)	NA		
Triple Point Press. (PT)	NA		
Critical Temperature. (TC)	6.30300E+02	K	units
Critical Pressure (PC)	3.73200E+03	kPa	units
Critical Volume (VC)	3.70000E-01	m^3/kg-mol	units
Critical Compressibility (ZC)	2.63487E-01		
Accentric Factor (ACCF)	3.10000E-01		

Temperature Dependent Properties

Vapor Pressure	Coeff.s Available	coefficients
Heat Capacity (Ideal Gas)	Coeff.s Available	coefficients
Heat Capacity (Liquid)	Coeff.s Available	coefficients
Viscosity (Gas, Low P)	Coeff.s Available	coefficients
Viscosity (Liquid)	Coeff.s Available	coefficients
Themal Conductivity (Gas, Low P)	Coeff.s Available	coefficients
Themal Conductivity (Liquid)	Coeff.s Available	coefficients
Surface Tension	NA	

Liquid Properties

Partial Molar Volume (VOLP)	1.212000E-01	m^3/kg-mol	units
Solubility Parameters (SOLP)	1.838684E+04	(J/cm^3)^0.5	units
SRK accentric factor (WSRK)	3.118000E-01		
COSTALD Characteristic Voluem (VSTAR)	3.673000E-01	m^3/kg-mol	units
Rackett parameter (ZRA)	2.620000E-01		
Aniline Point (ANP)	NA		

Enthalpy Data

H(formation,ideal gas)at 25 C	1.900000E+04	kJ/kg-mol	units
G(formation,ideal gas) at 25 C	1.222000E+05	kJ/kg-mol	units
Heat of Combustion, Gross form (HCB1)	4.552862E+06	kJ/kg-mol	units
Heat of Combustion, Net form (HCB2)	4.332784E+06	kJ/kg-mol	units

Molecular Properties

Van der Waals Volume (VDWV)	NA		
Van der Waals Area (VDWA)	NA		
UNIQUAC Ri Parameter (RI)	4.657800E+00		
UNIQUAC Qi Parameter (QI)	3.536000E+00		
Dipole Moment (DM)	5.000000E-01	debye	units
Radius of Gyration (GYRAD)	3.789000E+00		

Single Temperature Properties

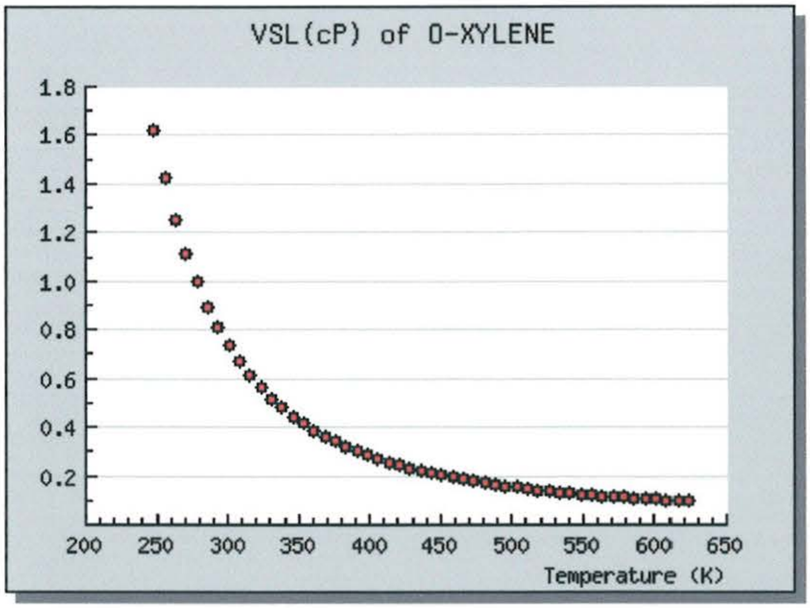
Liquid Density (DENL)	8.288828E-03	g-mol/cm^3	units
Temperature of DENL (TDENL)	2.930000E+02	K	units
Heat of Vaporizaiton (HVAP)	3.681900E+04	kJ/kg-mol	units
Temperature of HVAP (THVAP)	4.175000E+02	K	units
Surface Tension (SRF)	3.031000E+01	dyn/cm	units
Temperature of SRF (TSRF)	2.932000E+02	K	units
Dielectric Constant (DIEL)	NA		
Temperature of DIEL (TDIEL)	NA		
Refractive Index (RFI)	1.502950E+00		
Temperature of RFI (TRFI)	2.981500E+02	K	units

Hazardous Data

Lower Flammability Limi(FLL)	1.100000E+00	% in Air	
Upper Flammability Limit(FLU)	7.000000E+00	% in Air	
Flash Point (Open Cup Method)	2.903722E+02	K	units
Flash Point (Closed Cup Method)	2.970389E+02	K	units
Autoignition Temperature (AIGT)	7.381500E+02	K	units
NFPA Rating (Health)	2		
NFPA Rating (Fire)	3		
NFPA Rating (Safety)	2		

Temperature Dependent Properties

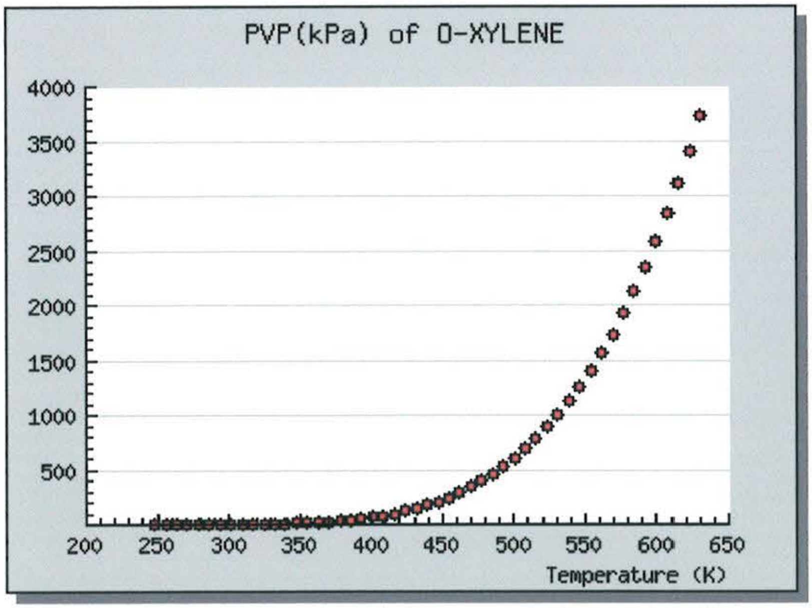
[VSL] Liquid Viscosity of O-XYLENE



Equation Name	Quasipolynomial Equation	
Equation	ln (VISL) = A + B/T + C*T + D*T^2 where T in K and VISL in cP.	
Coefficient A	-3.332	
Coefficient B	1039	
Coefficient C	-.001768	
Coefficient D	1.076E-06	
Coefficient E		
Coefficient F		
Coefficient G		
T range , from	248.15	K
T range , to	623.15	K

Temperature Dependent Properties

[PVP] Vapor pressure of O-XYLENE



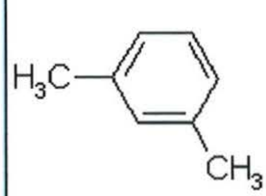
Equation Name	KDB Correlation Equation
Equation	ln(Pvp) = A*ln(T) + B/T + C + D*T^2 where Pvp in kPa, T in K
Coefficient A	-1.006059E+01
Coefficient B	-7.946229E+03
Coefficient C	8.332184E+01
Coefficient D	5.939742E-06
Coefficient E	
Coefficient F	
Coefficient G	
T range , from	247.98 K
T range , to	630.37 K

Pure Component Properties

[Instruction] Click on units to view values in other units of measure !

* NA : Not Available (No data found)

Component Names and Formula



ID	655
Name	M-XYLENE
	1,3-DIMETHYLBENZENE
	M-DIMETHYLBENZENE
	M-XYLOL
Formula	C8H10
	(C(CH3)CHC(CH3)CHCHCH)
CA No.	108-38-3

Basic Properties

Molecular Wt. (WT)	1.06167E+02		
Normal Boiling Point Temp. (TB)	4.12270E+02	K	units
Freezing Point Temp. (TF)	2.25300E+02	K	units
Triple Point Temp. (TT)	NA		
Triple Point Press. (PT)	NA		
Critical Temperature. (TC)	6.17000E+02	K	units
Critical Pressure (PC)	3.54100E+03	kPa	units
Critical Volume (VC)	3.75000E-01	m^3/kg-mol	units
Critical Compressibility (ZC)	2.58842E-01		
Accentric Factor (ACCF)	3.25000E-01		

Temperature Dependent Properties

Vapor Pressure	Coeff.s Available	coefficients
Heat Capacity (Ideal Gas)	Coeff.s Available	coefficients
Heat Capacity (Liquid)	Coeff.s Available	coefficients
Viscosity (Gas, Low P)	Coeff.s Available	coefficients
Viscosity (Liquid)	Coeff.s Available	coefficients
Themal Conductivity (Gas, Low P)	Coeff.s Available	coefficients
Themal Conductivity (Liquid)	Coeff.s Available	coefficients
Surface Tension	NA	

Liquid Properties

Partial Molar Volume (VOLP)	1.234700E-01	m^3/kg-mol	units
Solubility Parameters (SOLP)	1.803911E+04	(J/cm^3)^0.5	units
SRK accentric factor (WSRK)	3.270000E-01		
COSTALD Characteristic Voluem (VSTAR)	3.731000E-01	m^3/kg-mol	units
Rackett parameter (ZRA)	2.625000E-01		
Aniline Point (ANP)	NA		

Enthalpy Data

H(formation,ideal gas)at 25 C	1.725000E+04	kJ/kg-mol	units
G(formation,ideal gas) at 25 C	1.189000E+05	kJ/kg-mol	units
Heat of Combustion, Gross form (HCB1)	4.551858E+06	kJ/kg-mol	units
Heat of Combustion, Net form (HCB2)	4.331779E+06	kJ/kg-mol	units

Molecular Properties

Van der Waals Volume (VDWV)	NA		
Van der Waals Area (VDWA)	NA		
UNIQUAC Ri Parameter (RI)	4.657800E+00		
UNIQUAC Qi Parameter (QI)	3.536000E+00		
Dipole Moment (DM)	3.000000E-01	debye	units
Radius of Gyration (GYRAD)	3.897000E+00		

Single Temperature Properties

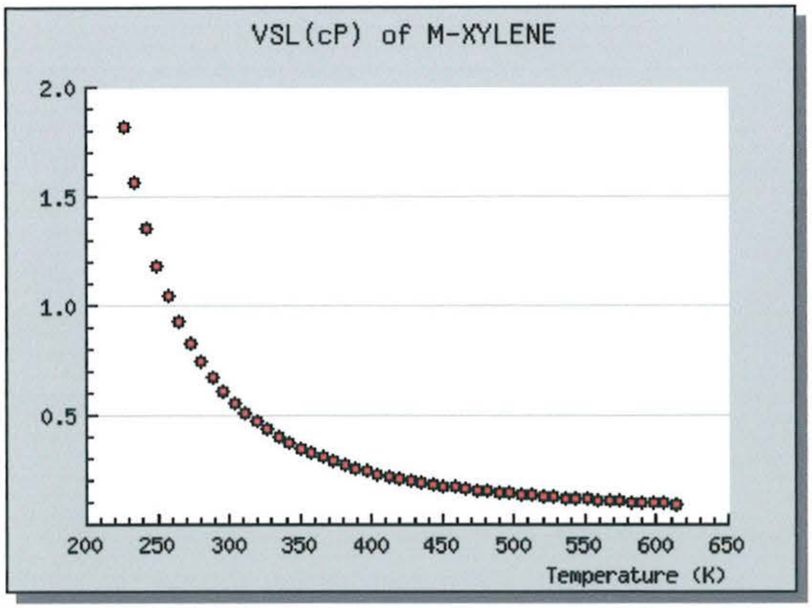
Liquid Density (DENL)	8.138122E-03	g-mol/cm^3	units
Temperature of DENL (TDENL)	2.930000E+02	K	units
Heat of Vaporizaiton (HVAP)	3.635900E+04	kJ/kg-mol	units
Temperature of HVAP (THVAP)	4.122000E+02	K	units
Surface Tension (SRF)	2.902000E+01	dyn/cm	units
Temperature of SRF (TSRF)	2.932000E+02	K	units
Dielectric Constant (DIEL)	NA		
Temperature of DIEL (TDIEL)	NA		
Refractive Index (RFI)	1.494640E+00		
Temperature of RFI (TRFI)	2.981500E+02	K	units

Hazardous Data

Lower Flammability Limi(FLL)	1.100000E+00	% in Air	
Upper Flammability Limit(FLU)	6.400000E+00	% in Air	
Flash Point (Open Cup Method)	3.020389E+02	K	units
Flash Point (Closed Cup Method)	NA		
Autoignition Temperature (AIGT)	8.031500E+02	K	units
NFPA Rating (Health)	2		
NFPA Rating (Fire)	3		
NFPA Rating (Safety)	2		

Temperature Dependent Properties

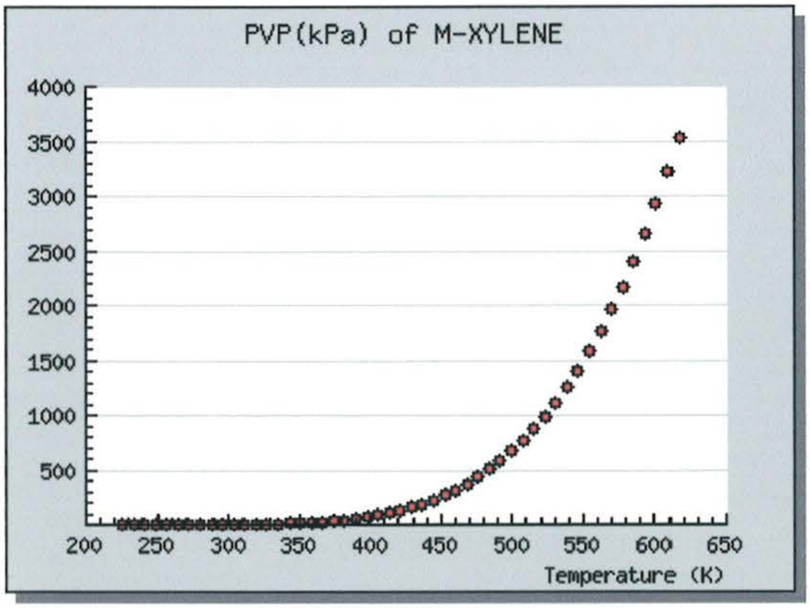
[VSL] Liquid Viscosity of M-XYLENE



Equation Name	Quasipolynomial Equation
Equation	ln (VISL) = A + B/T + C*T + D*T^2 where T in K and VISL in cP.
Coefficient A	-3.82
Coefficient B	1027
Coefficient C	-.000638
Coefficient D	4.52E-07
Coefficient E	
Coefficient F	
Coefficient G	
T range , from	226.15 K
T range , to	613.15 K

Temperature Dependent Properties

[PVP] Vapor pressure of M-XYLENE



Equation Name	KDB Correlation Equation
Equation	ln(Pvp) = A*ln(T) + B/T + C + D*T^2 where Pvp in kPa, T in K
Coefficient A	-9.106679E+00
Coefficient B	-7.556611E+03
Coefficient C	7.686698E+01
Coefficient D	5.403634E-06
Coefficient E	
Coefficient F	
Coefficient G	
T range , from	225.30 K
T range , to	617.05 K

Pure Component Properties

[Instruction] Click on units to view values in other units of measure !
* NA : Not Available (No data found)

Component Names and Formula

ID	656
Name	P-XYLENE
	1,4-DIMETHYLBENZENE
	P-DIMETHYLBENZENE
	P-XYLOL
Formula	C8H10
	(C(CH3)CHCHC(CH3)CHCH)
CA No.	106-42-3

Basic Properties

Molecular Wt. (WT)	1.06167E+02		
Normal Boiling Point Temp. (TB)	4.11520E+02	K	units
Freezing Point Temp. (TF)	2.86300E+02	K	units
Triple Point Temp. (TT)	NA		
Triple Point Press. (PT)	NA		
Critical Temperature. (TC)	6.16200E+02	K	units
Critical Pressure (PC)	3.51100E+03	kPa	units
Critical Volume (VC)	3.78000E-01	m^3/kg-mol	units
Critical Compressibility (ZC)	2.59038E-01		
Accentric Factor (ACCF)	3.20000E-01		

Temperature Dependent Properties

Vapor Pressure	Coeff.s Available	coefficients
Heat Capacity (Ideal Gas)	Coeff.s Available	coefficients
Heat Capacity (Liquid)	Coeff.s Available	coefficients
Viscosity (Gas, Low P)	Coeff.s Available	coefficients
Viscosity (Liquid)	Coeff.s Available	coefficients
Themal Conductivity (Gas, Low P)	Coeff.s Available	coefficients
Themal Conductivity (Liquid)	Coeff.s Available	coefficients
Surface Tension	NA	

Liquid Properties

Partial Molar Volume (VOLP)	1.239300E-01	m^3/kg-mol	units
Solubility Parameters (SOLP)	1.793684E+04	(J/cm^3)^0.5	units
SRK accentric factor (WSRK)	3.216000E-01		
COSTALD Characteristic Voluem (VSTAR)	3.740000E-01	m^3/kg-mol	units
Rackett parameter (ZRA)	2.592000E-01		
Aniline Point (ANP)	NA		

Enthalpy Data

H(formation,ideal gas)at 25 C	1.796000E+04	kJ/kg-mol	units
G(formation,ideal gas) at 25 C	1.212000E+05	kJ/kg-mol	units
Heat of Combustion, Gross form (HCB1)	4.552862E+06	kJ/kg-mol	units
Heat of Combustion, Net form (HCB2)	4.332784E+06	kJ/kg-mol	units

Molecular Properties

Van der Waals Volume (VDWV)	NA		
Van der Waals Area (VDWA)	NA		
UNIQUAC Ri Parameter (RI)	4.657800E+00		
UNIQUAC Qi Parameter (QI)	3.536000E+00		
Dipole Moment (DM)	1.000000E-01	debye	units
Radius of Gyration (GYRAD)	3.796000E+00		

Single Temperature Properties

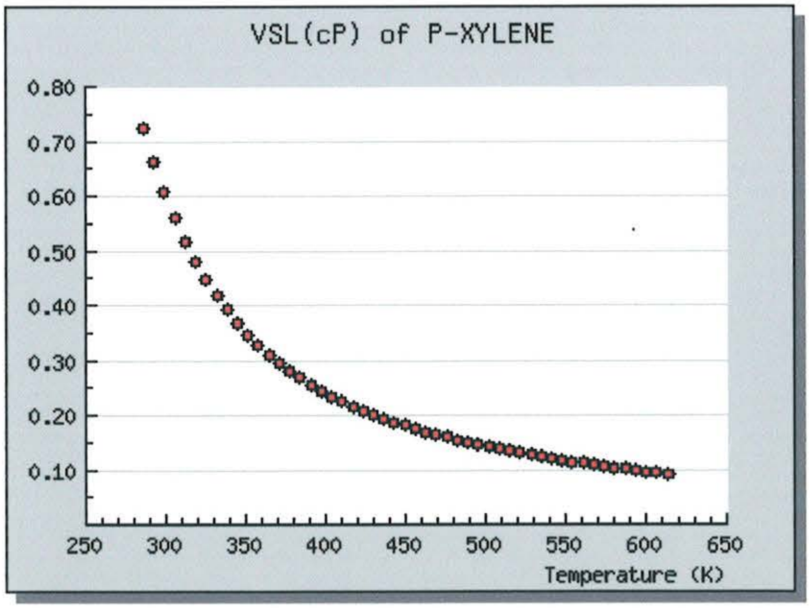
Liquid Density (DENL)	8.109865E-03	g-mol/cm^3	units
Temperature of DENL (TDENL)	2.930000E+02	K	units
Heat of Vaporizaiton (HVAP)	3.598200E+04	kJ/kg-mol	units
Temperature of HVAP (THVAP)	4.114000E+02	K	units
Surface Tension (SRF)	2.855000E+01	dyn/cm	units
Temperature of SRF (TSRF)	2.932000E+02	K	units
Dielectric Constant (DIEL)	NA		
Temperature of DIEL (TDIEL)	NA		
Refractive Index (RFI)	1.493250E+00		
Temperature of RFI (TRFI)	2.981500E+02	K	units

Hazardous Data

Lower Flammability Limi(FLL)	1.100000E+00	% in Air	
Upper Flammability Limit(FLU)	6.600000E+00	% in Air	
Flash Point (Open Cup Method)	3.003722E+02	K	units
Flash Point (Closed Cup Method)	NA		
Autoignition Temperature (AIGT)	7.387056E+02	K	units
NFPA Rating (Health)	2		
NFPA Rating (Fire)	3		
NFPA Rating (Safety)	2		

Temperature Dependent Properties

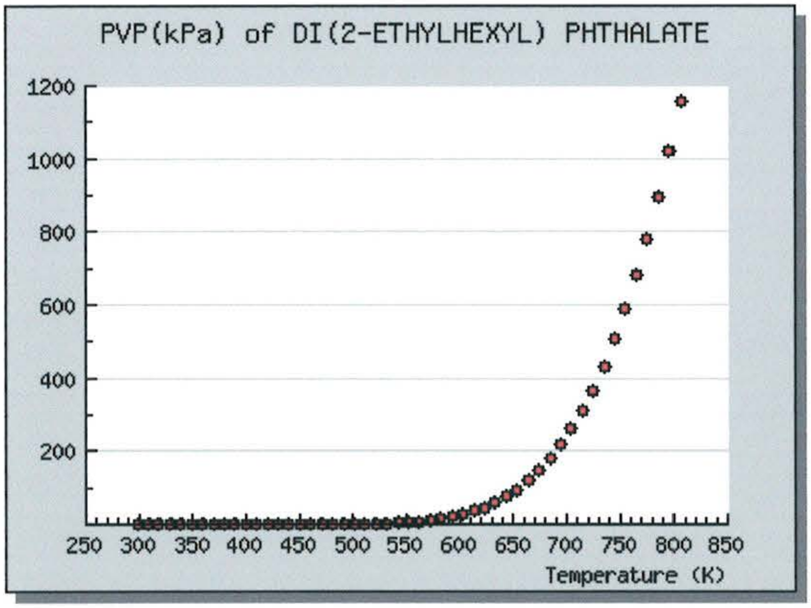
[VSL] Liquid Viscosity of P-XYLENE



Equation Name	Quasipolynomial Equation	
Equation	ln (VISL) = A + B/T + C*T + D*T^2 where T in K and VISL in cP.	
Coefficient A	-7.79	
Coefficient B	1580	
Coefficient C	.00873	
Coefficient D	-6.735E-06	
Coefficient E		
Coefficient F		
Coefficient G		
T range , from	286.15	K
T range , to	613.15	K

Temperature Dependent Properties

[PVP] Vapor pressure of DI(2-ETHYLHEXYL) PHTHALATE

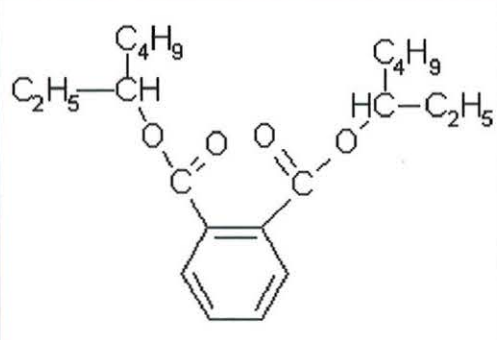


Equation Name	KDB Correlation Equation	
Equation	ln(Pvp) = A*ln(T) + B/T + C + D*T^2 where Pvp in kPa, T in K	
Coefficient A	-1.944192E+01	
Coefficient B	-2.042748E+04	
Coefficient C	1.605625E+02	
Coefficient D	2.987730E-06	
Coefficient E		
Coefficient F		
Coefficient G		
T range , from	298.00	K
T range , to	806.00	K

Pure Component Properties

[Instruction] Click on units to view values in other units of measure !
* NA : Not Available (No data found)

Component Names and Formula



ID	1160
Name	DI(2-ETHYLHEXYL) PHTHALATE
	BIS (2-ETHYLHEXYL) PHTHALATE
	DIOCTYL PHTHALATE
Formula	C24H38O4
	(C(COOCH(C2H5)C4H9)C(COOCH(C2H5)C4H9)CHCHCHCH)
CA No.	117-81-7

Basic Properties

Molecular Wt. (WT)	3.90562E+02		
Normal Boiling Point Temp. (TB)	NA		
Freezing Point Temp. (TF)	NA		
Triple Point Temp. (TT)	NA		
Triple Point Press. (PT)	NA		
Critical Temperature. (TC)	NA		
Critical Pressure (PC)	NA		
Critical Volume (VC)	NA		
Critical Compressibility (ZC)	NA		
Accentric Factor (ACCF)	NA		

Temperature Dependent Properties

Vapor Pressure	Coeff.s Available	coefficients
Heat Capacity (Ideal Gas)	NA	
Heat Capacity (Liquid)	NA	
Viscosity (Gas, Low P)	NA	
Viscosity (Liquid)	NA	
Themal Conductivity (Gas, Low P)	NA	
Themal Conductivity (Liquid)	NA	
Surface Tension	NA	

Liquid Properties

Partial Molar Volume (VOLP)	NA		
Solubility Parameters (SOLP)	NA		
SRK accentric factor (WSRK)	NA		
COSTALD Characteristic Voluem (VSTAR)	NA		
Rackett parameter (ZRA)	NA		
Aniline Point (ANP)	NA		

Enthalpy Data

H(formation,ideal gas)at 25 C	NA		
G(formation,ideal gas) at 25 C	NA		
Heat of Combustion, Gross form (HCB1)	NA		
Heat of Combustion, Net form (HCB2)	NA		

Molecular Properties

Van der Waals Volume (VDWV)	NA		
Van der Waals Area (VDWA)	NA		
UNIQUAC Ri Parameter (RI)	NA		
UNIQUAC Qi Parameter (QI)	NA		
Dipole Moment (DM)	NA		
Radius of Gyration (GYRAD)	NA		

Single Temperature Properties

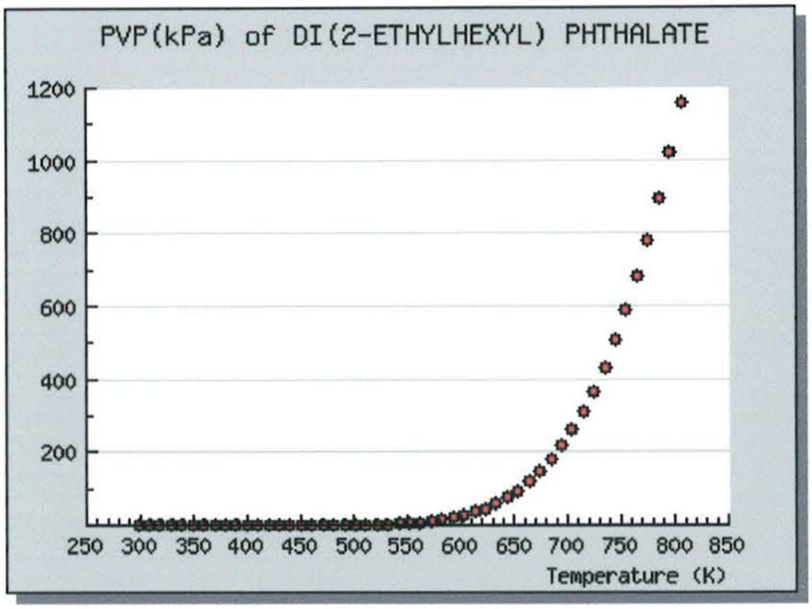
Liquid Density (DENL)	NA		
Temperature of DENL (TDENL)	NA		
Heat of Vaporizaiton (HVAP)	NA		
Temperature of HVAP (THVAP)	NA		
Surface Tension (SRF)	NA		
Temperature of SRF (TSRF)	NA		
Dielectric Constant (DIEL)	NA		
Temperature of DIEL (TDIEL)	NA		
Refractive Index (RFI)	NA		
Temperature of RFI (TRFI)	NA		

Hazardous Data

Lower Flammability Limi(FLL)	NA		
Upper Flammability Limit(FLU)	NA		
Flash Point (Open Cup Method)	NA		
Flash Point (Closed Cup Method)	NA		
Autoignition Temperature (AIGT)	NA		
NFPA Rating (Health)			
NFPA Rating (Fire)			
NFPA Rating (Safety)			

Temperature Dependent Properties

[PVP] Vapor pressure of DI(2-ETHYLHEXYL) PHTHALATE



Equation Name	KDB Correlation Equation	
Equation	ln(Pvp) = A*ln(T) + B/T + C + D*T^2 where Pvp in kPa, T in K	
Coefficient A	-1.944192E+01	
Coefficient B	-2.042748E+04	
Coefficient C	1.605625E+02	
Coefficient D	2.987730E-06	
Coefficient E		
Coefficient F		
Coefficient G		
T range , from	298.00	K
T range , to	806.00	K

Appendix H
Agency Correspondence

RMT®
Integrated Environmental Solutions

222 South Riverside Plaza
Suite 820
Chicago, IL 60606
Telephone: 312-575-0200
Fax: 312-575-0300

February 11, 2002

Ms. Gwen Zervas
Case Manager
New Jersey Department of Environmental Protection
Bureau of Federal Case Management
Division of Responsible Party Remediation
CN 028
Trenton, NJ 08625-0028

Subject: L.E. Carpenter & Company (LEC), Wharton, New Jersey
Free Product Recovery Work Plan and Waste Characterization Issues

Dear Ms. Zervas:

This letter summarizes our conference call on January 29, 2002 and provides the detail on the wet excavation work and the waste characterization determinations that require NJDEP approval prior to proceeding with the work plan development. We solicit NJDEP's approval on these critical decision points in order to proceed with the report preparation and subsequent workplan for addressing the free product. We request your immediate evaluation of these issues and a written response by February 28, 2002, in order to maintain our March 15, 2002 report commitment to NJDEP. Should the Agency have a different opinion, I request you contact me and allow an opportunity to address the determination prior to receiving it in writing.

Fieldwork Summary

RMT discussed two new issues raised as a result of the lead and free product investigation fieldwork:

1) A hazardous process waste (characteristic for lead and cadmium, detection levels of organic solvents) was found east of Building 14 between the former building and the former above ground storage tanks. There are potentially 200 to 1,000 in place cubic yards of this process waste.
2) A large volume (60% or more) of soil or overburden material in the proposed residual- and free-product excavation area is greater than three inches in diameter. Three inches is the maximum diameter size for material that can be fed into an on-site thermal desorption unit. This coarse fraction of cobbles and very large boulders is not suitable for treatment and would be difficult to wash. RMT proposes that these large cobbles and boulders be returned to the excavation unwashed. We do not believe this activity will re-introduce a significant amount of product into the excavation because of the non-porous nature of these boulders, and the very low surface area to volume ratio of this coarser material.

These issues cause a potential shift in our remedial approach from on-site treatment to off-site disposal. However, certain determinations regarding excavation work activities and waste characterization must be definite to clearly assess both on-site and off-site options.

Wet Excavation Work Area

RMT discussed delineating an exclusion zone containing and surrounding a "wet-excavation" area to expose and reduce the residual- and free-product source area near former Building #14. It is important to understand that construction means and methods may change and become more refined as the work plan progresses. Currently, construction activities include, but are not limited to removing the overburden materials and placing them nearby until the residual- and free-product (smear) zone is exposed. The overburden soil and coarse-grained material not determined to be hazardous waste will be used to fill the excavation once activities are completed. Source zone materials within the residual- and free-product zone may be staged in a manner that allows the piles to dewater with the liquids flowing back into the excavation. The intent is to remove immiscible product from the water in the excavation using means such as, but not limited to skimmer pumps and absorbent pads. It is possible that the free product smear-zone will exist up to a foot below the water table, and it may therefore be necessary to excavate to this level. Soil management, such as, but not limited to screening, dewatering, separation of immiscible fluids, or adding absorbent, stabilization, or solidification material to draw off any remaining free liquids will be performed in this area. There are no Resource Conservation and Recovery Act (RCRA) permitting requirements or NJDEP petition equivalency requirement for such in-excavation activities because the point of generation for any waste (free product, contaminated soil, absorbent pads, etc.) occurs when this material is removed from the excavation area and loaded into containers. Waste characterization and waste management procedures, including potential Land Disposal Restriction (LDR) requirements, would apply only at the point of material removal from the excavation.

Waste Characterization – Free Product Layer

Free product and soils containing residual product representative of the waste stream, were sampled in the area near the former Building #14 on November 15 and December 10, 2001 in addition to other samples of free product obtained during 1999-2000. RMT performed a waste characterization and determined the free product to be an F003 listed waste only. This is a deviation from previous characterizations of D001, F003 & F005 and is explained in detail below.

The free-product waste stream is liquid and has a flashpoint less that 140° F, thus exhibiting the characteristic of ignitability. Similarly, there are notable xylene, DEHP, and ethylbenzene concentrations. EPA's guidance document Management of Remediation Waste Under RCRA, dated October 14, 1998 provides determination guidance when contamination is caused by a listed waste. "Where a facility makes a good faith effort to determine if a material is a listed hazardous waste but cannot make such a determination because documentation regarding the sources of contamination, contaminant, or waste is unavailable or inconclusive, EPA has stated that one may assume the source, contaminant or waste is not listed hazardous waste and, therefore, provided the material does not exhibit a characteristic of hazardous waste, RCRA requirements do not apply." This EPA approach is articulated in the final NCP preamble 55 FR 8758, dated March 13, 1990.

F003 and F005 are listed for solvents used for their solvent purposes. Typical processes that generate spent solvents included degreasing, cleaning, fabric scouring, or use as diluents, extractants, and synthesis media. If a solvent is used as a reactant or ingredient in the formulation of a commercial chemical product, it is not considered a spent solvent when discarded. Phthalates were used as plasticizers in the manufacturing of vinyl wall covering and are not considered RCRA waste unless as a pure commercial chemical product which is indeterminate for the free product layer.

Roy F. Weston previously characterized remediation waste with F003/F005 but this may have been in error if the source was not used for solvent purposes. RMT has made a good faith effort to obtain the process information to determine if F003 (xylene, ethylbenzene, methyl isobutyl ketone) and F005 (toluene, benzene, methyl ethyl ketone) apply. A sufficient description of the manufacturing process, outlining the use of organics at L. E. Carpenter, has not been located. In addition, RMT cannot locate any such documentation in the Roy F. Weston reports. One credible document is a 1987 raw inventory list for the facility that identifies xylene and waste xylene (Xylol) tanks in the tank farm adjacent to building #14. It is determined that the F003 listing is credible and sufficient evidence is available to back up xylene use for its solvent purposes rather than as an ingredient because of the employment of a waste tank for the xylene.

General manufacturing information from trade organizations and the EPA Sector Notebook for the Rubber and Plastics Industry shows organic chemicals used as both ingredients (calendering, coating) and as cleaners & diluents (printing, inking). Although toluene and methyl ethyl ketone were used at the facility, their storage locations and association to the print area, rather than the process area of Building #14 does not support any use of these chemicals in building 14 as solvents. Additionally, the analyses for the free product did not show detection of toluene, methyl ethyl ketone, or any other chemical of concern listed under F005. Therefore, RMT has determined that the free product should not be classified as a F005 listed waste.

Lastly is the issue of ignitability and if the materials excavated from the residual- and free product zone should have a D001 code. F003 was finalized in 1985 because it was listed solely for ignitability. 40 CFR 268.9 (b) states that where a waste is both listed under 40 CFR part 261, subpart D and exhibits a characteristic under 40 CFR part 261, subpart C, the treatment standard for the waste code listed in 40 CFR part 261, subpart D will operate in lieu of the standard for the characteristic waste code, provided that the treatment standard for the listed waste includes treatment standard for the constituent that causes the waste to exhibit the characteristic. In this situation, F003 and D001 both address the characteristic of ignitability but the use of xylene for solvent purposes triggers the F003 listing. The materials in the residual- and free-product zone do not exhibit any other RCRA hazardous characteristic (metals, organics, reactive, corrosive) so therefore the treatment standard for F003 will address the treatment standard for ignitability, and so it will not be characterized as D001.

Waste Characterization – Excavated soils, absorbents, etc.

Any solid waste associated with excavation of the residual- and free-product zone including soils excavated from the smear zone and wet excavation area, absorbent booms, and debris, will be characterized for RCRA hazardous characteristics only at their point of generation. Their point of generation is when they are removed from the excavation areas and placed into containers (i.e. roll-off boxes or similar transport or intermediary container).

As previously discussed, the F005 listing is not applicable. D001 is not applicable because these wastes are not liquid and do not meet the definition of ignitability under 40 CFR 261.21. There is no intention of having any releasable or "free" liquids in any of these solid waste streams. This requirement is driven by either low moisture content requirements for thermal desorption, for meeting Department of Transportation (DOT) requirements for transportation of these wastes for disposal, or the objective of removing and segregating as much free-product as possible during excavation of soils from the excavation areas.

The May 16, 2001 Hazardous Waste Identification Rule, effective August 14, 2001 provided eligibility of F003 solvents for the exclusion found in 40 CFR 261.3(g). This exclusion applies only to F003 wastes that do not contain 10% or more of other F-listed solvents and are wastes listed solely for ignitability, corrosivity, and reactivity that do not exhibit the characteristic at the point of generation. Wastes meeting these criteria will be considered non-hazardous under this exclusion and are not subject to 40 CFR part 268. In this case, the F003 waste stream is listed solely for ignitability and does not contain any other F-listed waste greater than 10%. Similar to the D001 explanation previously discussed, waste soils and other solid wastes generated as a result of the excavation activities will not meet the definition of ignitability 40 CFR 261.21 at the point of generation. Therefore, this waste will be excluded as an F003 listed waste and F003 will not be used to characterize these solid wastes generated from the excavation area.

Summary

In order to proceed with our submittal of the March 15 report; we are requesting NJDEP's evaluation and concurrence with our determinations by February 28, 2002. To summarize, our determinations are as follows:

- The wet excavation work area and its activities should be acknowledged as prior to the point of generation of any waste.

- The only applicable waste characterizations for the free product liquid is F003.

- The waste characterization of the excavated soils, booms, etc. should be classified as non-hazardous RCRA waste (not listed and not exhibiting a hazardous characteristic).

Ms. Gwen Zervas
New Jersey Department of Environmental Protection
February 11, 2002
Page 5

Please contact me at your earliest convenience to discuss these issues further should you have questions or find reason for non-concurrence.

Sincerely,

RMT, Inc.

Nicholas J. Clevett
Project Manager

Attachments:

cc: Cris Anderson – LEC
Laura Curtis – RMT
Holly Herner - RMT
Jim Dexter – RMT
Drew Diefendorf – RMT
Wally Kurzeja – RMT
Dan Oman - RMT
Central Files (2)

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WESTON
MANAGERS DESIGNERS CONSULTANTS
RARITAN PLAZA I
4TH FLOOR, RARITAN CENTER
EDISON, NJ 08837-3616
908-417-5800 • FAX: 908-417-5801

11 January 1995

Ms. Christina H. Purcell, Case Manager
New Jersey Department of Environmental Protection
Bureau of Federal Case Management
Division of Responsible Party Site Remediation
CN 028
Trenton, New Jersey 08625-0028

Work Order No.:06720-021-001

RE: REQUEST FOR CONSOLIDATION OF NON-HAZARDOUS INORGANIC SOILS
L.E. CARPENTER AND COMPANY
WHARTON, NEW JERSEY

Dear Ms. Purcell:

On behalf of L.E. Carpenter and Company (Carpenter), Roy F. Weston, Inc. (WESTON®) is requesting permission to consolidate the soils excavated from inorganic hot spots A, B, C, and D within the waste disposal area. This request was made of Mr. Roman Luzecky via telephone conversation on 10 January 1995. Mr Luzecky suggested that WESTON put the request with all supporting information into a letter. The supporting information is included in this letter.

As you are aware, WESTON has been excavating hot spot soils at the L.E. Carpenter site in Wharton in accordance with the Record of Decision (ROD) dated April 1994. Hot spot soils with inorganic (primarily lead) concentrations in excess of New Jersey Department of Environmental Protection (NJDEP) action levels have been excavated from areas east of the railroad right of way. Isolated hot-spot soils contaminated with bis(2-ethylhexyl) phthalate (DEHP) have been excavated from areas west of the railroad right of way and are being consolidated within the excavation created by removal of the sludge, drum debris, and visibly contaminated soil in the waste disposal area. The parcel of land on which the consolidation of DEHP soils is occurring will remain under an environmental restriction of deed, as required under the ROD.

The Feasibility Study and Work Plan written and approved for the site estimated the volume of soils which would be removed from each excavation. As the field program has progressed, field conditions and/or post-excavation data for several of the excavations (i.e.: waste disposal area, hot spots B and C) have caused the excavations to become much larger than originally anticipated. A summary of the "planned" and actual volumes of soils excavated to date are presented in Table 1. A figure depicting the location and extent of the various hot spots is presented as Figure 1.

As a result of the increased size of the waste disposal area, as well as the fact that the volume of total excavated organic hot spot soils has remained consistent with the estimated volume, there is an additional capacity within the disposal area to accept soils for consolidation.

The soils excavated from the inorganic hot spots have been sampled to determine the appropriate waste disposal classification. The analytical results for the waste classification sampling performed on the excavated inorganic hot spot soils is presented in Attachment A. In all cases, the sample analyses for RCRA criteria (i.e.: toxicity via TCLP, ignitability, reactivity, and corrosivity) indicate that the soils are not characteristic wastes, and specifically, do not pose a hazard by potential leaching of the metals. Based on this criteria, the soils could be classified as non-hazardous wastes. However, the DEHP concentrations in the soils have been analyzed as being greater than the land ban limit of 28 mg/kg. This concentration, coupled with the modification in the regulations governing the pretreatment of land ban wastes, will force the incineration of these soils for DEHP content prior to disposal if these soils are managed off-site.

WESTON is proposing, therefore, that NJDEP allow Carpenter to consolidate the non-hazardous soils within the disposal area, in the area in which subsequent biological treatment will be provided for the in-situ soils. WESTON believes this would be consistent with the requirements of the ROD in that soils contaminated with organic compounds (DEHP) are to be consolidated for in-situ bioremediation (as specified for organic hot spots), while being managed in accordance with their waste disposal classification, as specified for inorganic hot spots.

WESTON would appreciate consideration of this request by 23 January 1994. If you have any questions or should require any additional information to assist you in making this decision, please feel to call either Laura J. Amend-Babcock or me at (908) 417-5800.

Very truly yours,

ROY F. WESTON, INC.

Laura J. Amend Babcock, PE

(for) Martin J. O'Neill, CIH, CHMM
Project Director

John Pendergast
609-633-7413

cc: C. Anderson, LEC
R. Luzecky, NJDEP (2 copies)
J. Prendergast, NJDEP
L. Amend-Babcock, WESTON
T. Walles, WESTON

sk\ONEILL\PURC0111.LTR

WESTON

TABLE 1

ESTIMATED VOLUMES EXCAVATED DURING PHASE I ROD IMPLEMENTATION
L.E. CARPENTER AND COMPANY, WHARTON, NEW JERSEY
(as of 11 January 1995)

Hot Spot	Work Plan Estimate (yd^3)	Current Volume (yd^3)	Excavation Complete?	Notes
1	42 yd^3	308 yd^3	YES	
2	463 yd^3	122 yd^3	YES	
3	30 yd^3	25 yd^3	YES	
4	30 yd^3	40 yd^3	no*	
5	30 yd^3	30 yd^3	YES	
6	330 yd^3	25 yd^3	YES	1.
A	30 yd^3	10 yd^3	YES	
B	30 yd^3	175 yd^3	no*	
C	67 yd^3	109 yd^3	no*	
D	67 yd^3	35 yd^3	YES	
Waste Disposal Area	300 yd^3	700 yd^3	YES	2.

Notes:

* Waiting on analytical results to determine of excavation is complete.

1. The Work Plan calls for "free-product contaminated soils" to be disposed off-site. Free-product contaminated soils were not encountered during excavation of hot spot 6, therefore, this material may be consolidated within the waste disposal area.

2. WESTON is currently evaluating the feasibility of physically screening the material to remove cobbles, boulders, and debris, to reduce the volume of the stockpiled soils.

sk\ONEILL\PURC0111.LTR

ATTACHMENT A

WASTE CLASSIFICATION ANALYTICAL RESULTS

WESTON Analytics Use Only

Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client LE Carpenter
Est. Final Proj. Sampling Date ____
Work Order # 06720-021-001-0004
Project Contact/Phone # Laura Babcock/908-417-58..
AD Project Manager ____
QC ____ Del Non CLP Reduced TAT 24/48 hours **
Date Rec'd ____ Date Due (std TAT for all not **)
Account # ____

Refrigerator #
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives

ANALYSES REQUESTED →

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ORGANIC VOA	BNA	Pest/PCB	Herb				INORG TCLP Metals (1311)	CN	Antimony (6010)	Lead (6010)				
	HSA-PES-1 **			SOIL	11/29/94	1230		16560								X					
	HSA-PES-2 **					1230		16561								X					
	HSA-PEB-1 **			Soil		1230		16562								X					
	11/29 FB			Water		1200		16563								X	X				
	*HSA-WC1			Soil		1330		16564						X							
	HSB-PES-1					1600		16565									X				
	HSB-PES-2					1600		16566									X				
	HSB-PEB-1			SOIL	11/29/94	1600		16567									X				

WESTON Analytics Use Only

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

6

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

* charge to work order # 06720-021-001-0002
-Use method 6010
-Only give results for antimony and/or lead (except sample HSA-WC1)
-give full TCLP metals for HSA-WC1

DATE/REVISIONS:
1. ** Provide 24 hour turn (48 hr guaranteed)
2. Provide std TAT for all others.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
John Fix	[illegible]	11/29/94	16:10				
	Envirotech						

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

WESTON Analytics Use Only

Samples were:
1) Shipped ___ or Hand Delivered X
Airbill # ____
2) ~~Ambient or~~ Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N

ENVIROTECH RESEARCH, INC.

Client ID: **HSA-WC1**
Site: **Carpenter**

Lab Sample No: 16564
Lab Job No: I101

Date Sampled: 11/29/94
Date Received: 11/29/94

Matrix: LEACHATE
Level: LOW

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

METALS ANALYSIS

Analyte	Analytical Result Units: mg/l	Regulatory Level Units: mg/l	Instrument Detection Limit	Qual	M
Arsenic	ND	5.0	0.10		P
Barium	2.2	100.0	0.00040		P
Cadmium	0.51	1.0	0.0048		P
Chromium	0.01	5.0	0.0058		P
Lead	ND	5.0	0.03		P
Mercury	ND	0.2	0.0001		CV
Selenium	0.09	1.0	0.064	B	P
Silver	ND	1.0	0.002		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

WESTON Analytics Use Only

Custody Transfer Record/Lab Work Request

WESTON

Client: LE Carpenter
Est. Final Proj. Sampling Date:
Work Order #: 06720-021-001-0004
Project Contact/Phone #: Laura Amend-Babcock/609 417-595
AD Project Manager:
QC: Del Non-CLP Relaxed TAT *24/48 hour
Date Rec'd: Date Due:
Account #:

Refrigerator #:
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives:

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb, SVOC (8270); INORG: TCLP Metals, CN; Lead (method 6010); Antimony (method 6010)

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	WESTON Analytics Use Only	SVOC (8270)	TCLP Metals	Lead	Antimony
	HSC-PES-1			SOIL	12/1/94	1050	16773			X	X
	HSC-PES-2					1055	16774			X	X
	HSC-PES-3					1100	16775			X	X
	HSC-PEB-1					1105	16776			X	X
	*HSC-WC1 (2 bottles)					1140	16777	X	X		
	HSD-PES-1					1430	16778			X	X
	HSD-PES-2					1440	16779			X	X
	HSD-PES-3					1450	16780			X	X
	HSD-PES-4					1435	16781			X	X
	HSD-PEB-1			Soil	12/1/94	1455	16782			X	X

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

- Samples with a * are for 24/48 hour turn around time. All other samples are standard TAT. Samples denoted with a * also indicate WESTON *WO # 06720-021-001-0002

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___ Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
John Fix	DJ [illegible]	12/1/94	1600				

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

16

WESTON Analytics Use Only

Custody Transfer Record/Lab Work Request

WESTON

Client: LE Carpenter
Est. Final Proj. Sampling Date:
Work Order #: 06720-021-001-0004
Project Contact/Phone #: Laura Amend-Babcock
AD Project Manager:
QC: ______ Del: Non-CLP Reduced TAT: * 24/48 hour
Date Rec'd: ______ Date Due: ______
Account #:

Refrigerator #															
#/Type Container	Liquid														
	Solid														
Volume	Liquid														
	Solid														
Preservatives															
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: TCLP Metals	CN	Lead (6010)	Antimony (6010)				

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb				TCLP Metals	CN	Lead (6010)	Antimony (6010)				
	*HSDB-WC1			SOIL	12/1/94	1515			16783					X							
	12/1-FB			Water	12/1/94	1420			16784							X	X				

(WESTON Analytics Use Only)

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
- Samples with a * are for 24/48 hour turn around time and charged to Weston WO # 06720-021-001-0002. All other samples are standard TAT.

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # ______
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
John Fix	D. [illegible]	12/1/94	1600				

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ______ Cooler# ______ 381-596a

ENVIROTECH RESEARCH, INC.

Client ID: HSC-WC-1
Site: Carpenter

Lab Sample No: 16777
Lab Job No: I128

Date Sampled: 12-01-94
Date Received: 12-01-94
Date Extracted: 12-02-94
Date Analyzed: 12-02-94
GC Column: DB-5
Instrument ID: BNAMS2
Lab File ID: s8982.d

Matrix: SOIL
Level: LOW
Sample Weight: 30 g
Extract Final Volume: 2.0 ml
Dilution Factor: 100.0
% Moisture: 13

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270

Parameter	Analytical Result Units: ug/kg (Dry Weight)	Quantitation Limit Units: ug/kg
Anthracene	ND	1900
Di-n-butylphthalate	ND	38000
Fluoranthene	3500	1900
Pyrene	2600	1900
Benzidine	ND	76000
Butylbenzylphthalate	ND	38000
,,3'-Dichlorobenzidine	ND	76000
Benzo(a)anthracene	ND	1900
Chrysene	ND	1900
bis(2-Ethylhexyl)phthalate	610000	38000
Di-n-octylphthalate	ND	38000
Benzo(b)fluoranthene	ND	1900
Benzo(k)fluoranthene	ND	1900
Benzo(a)pyrene	ND	1900
Indeno(1,2,3-cd)pyrene	ND	1900
Dibenz(a,h)anthracene	ND	1900
Benzo(g,h,i)perylene	ND	1900

ENVIROTECH RESEARCH, INC.

Client ID: HSC-WC-1
Site: Carpenter

Lab Sample No: 16777
Lab Job No: I128

Date Sampled: 12-01-94
Date Received: 12-01-94
Date Extracted: 12-02-94
Date Analyzed: 12-02-94
GC Column: DB-5
Instrument ID: BNAMS2
Lab File ID: s8982.d

Matrix: SOIL
Level: LOW
Sample Weight: 30 g
Extract Final Volume: 2.0 ml
Dilution Factor: 100.0
% Moisture: 13

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270

Parameter	Analytical Result Units: ug/kg (Dry Weight)	Quantitation Limit Units: ug/kg
Phenol	ND	38000
2-Chlorophenol	ND	38000
2-Nitrophenol	ND	38000
2,4-Dimethylphenol	ND	38000
2,4-Dichlorophenol	ND	38000
4-Chloro-3-methylphenol	ND	38000
2,4,6-Trichlorophenol	ND	38000
2,4-Dinitrophenol	ND	76000
4-Nitrophenol	ND	76000
4,6-Dinitro-2-methylphenol	ND	76000
Pentachlorophenol	ND	76000

ENVIROTECH RESEARCH, INC.

Client ID: HSC-WC-1
Site: Carpenter

Lab Sample No: 16777
Lab Job No: I128

Date Sampled: 12-01-94
Date Received: 12-01-94
Date Extracted: 12-02-94
Date Analyzed: 12-02-94
GC Column: DB-5
Instrument ID: BNAMS2
Lab File ID: s8982.d

Matrix: SOIL
Level: LOW
Sample Weight: 30 g
Extract Final Volume: 2.0 ml
Dilution Factor: 100.0
% Moisture: 13

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270

Parameter	Analytical Result Units: ug/kg (Dry Weight)	Quantitation Limit Units: ug/kg
N-Nitrosodimethylamine	ND	38000
bis(2-Chloroethyl)ether	ND	38000
1,3-Dichlorobenzene	ND	38000
1,4-Dichlorobenzene	ND	38000
1,2-Dichlorobenzene	ND	38000
bis(2-chloroisopropyl)ether	ND	38000
N-Nitroso-di-n-propylamine	ND	38000
Hexachloroethane	ND	38000
Nitrobenzene	ND	38000
Isophorone	ND	38000
bis(2-Chloroethoxy)methane	ND	38000
1,2,4-Trichlorobenzene	ND	38000
Naphthalene	ND	1900
Hexachlorobutadiene	ND	38000
Hexachlorocyclopentadiene	ND	38000
2-Chloronaphthalene	ND	38000
Dimethylphthalate	ND	38000
Acenaphthylene	ND	1900
2,6-Dinitrotoluene	ND	38000
Acenaphthene	ND	1900
2,4-Dinitrotoluene	ND	38000
Diethylphthalate	ND	38000
4-Chlorophenyl-phenylether	ND	38000
Fluorene	ND	1900
N-Nitrosodiphenylamine	ND	38000
4-Bromophenyl-phenylether	ND	38000
Hexachlorobenzene	ND	38000
Phenanthrene	3100	1900

Client ID: HSC-WC-1
Site: Carpenter

Lab Sample No: 16777
Lab Job No: I128

Date Sampled: 12/01/94
Date Received: 12/01/94

Matrix: LEACHATE
Level: LOW

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

METALS ANALYSIS

Analyte	Analytical Result Units: mg/l	Regulatory Level Units: mg/l	Instrument Detection Limit	Qual	M
Arsenic	ND	5.0	0.10		P
Barium	0.96	100.0	0.00040		P
Cadmium	0.04	1.0	0.0048		P
Chromium	0.02	5.0	0.0058		P
Lead	0.70	5.0	0.030		P
Mercury	ND	0.2	0.0001		CV
Selenium	ND	1.0	0.06		P
Silver	ND	1.0	0.002		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

ENVIROTECH RESEARCH, INC.

Client ID: **HSDB-WC-1**
Site: **Carpenter**

Lab Sample No: 16783
Lab Job No: I128

Date Sampled: 12/01/94
Date Received: 12/01/94

Matrix: LEACHATE
Level: LOW

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

METALS ANALYSIS

Analyte	Analytical Result Units: mg/l	Regulatory Level Units: mg/l	Instrument Detection Limit	Qual	M
Arsenic	ND	5.0	0.10		P
Barium	1.4	100.0	0.00040		P
Cadmium	ND	1.0	0.005		P
Chromium	ND	5.0	0.006		P
Lead	0.04	5.0	0.030	B	P
Mercury	ND	0.2	0.0001		CV
Selenium	ND	1.0	0.06		P
Silver	ND	1.0	0.002		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

State of New Jersey
Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

FEB 28 1995

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
NO. P 249 580 280

Cristopher Anderson
Director of Environmental Affairs
L. E. Carpenter & Company
Suite 36-5000
200 Public Square
Cleveland, OH 44114-2304

Re: L. E. Carpenter & Co. Site
Wharton Borough, Morris County
Response to letters dated January 11 and January 19, 1995

Dear Mr. Anderson:

This letter is in response to the requests presented in the January 11 and January 19, 1995 letters from Martin O'Neill, Roy F. Weston Inc. regarding soils consolidation and re-use of ID-27 rubble as backfill. In addition, the Department has some comments and concerns regarding the most recent field activities at the L. E. Carpenter site.

CONSOLIDATION OF NON-HAZARDOUS INORGANIC SOILS IN DISPOSAL AREA

The January 11, 1994 letter from WESTON regarding the inorganic hot spot removal indicated that bis(2-ethylhexyl)phthalate was found in the soil sample results taken from the hot spot areas A, B, C and D. Pursuant to WESTON's letter, the actual volume of soil being excavated from hot spots B and C is much greater than originally estimated due to the high levels of lead contamination. WESTON is also concerned with the high levels of DEHP (greater than 28 mg/kg) in the hot spot post excavation soil samples. WESTON claims that this will force the incineration of these soils due to the DEHP being greater than RCRA land ban limits.

The Department has reviewed the information presented and will not allow L. E. Carpenter to dispose of the inorganic hot spot soil in the waste disposal areas due to the following reasons:

1. The soil in question is not a hazardous waste as presented in the January 11, 1995 letter and therefore not subject to RCRA land ban restrictions.

2. The explanation of the chosen Alternative (#4) in the April 18, 1994 ROD calls for excavation and off site disposal of "disposal area" fill which may prove inhibitory to in situ treatment. Since lead is inhibitory to in situ treatment and the post excavation soil sample results indicated are above the

ROD lead soil cleanup level, the Department cannot allow this soil to be consolidated within the disposal area.

The Department will allow L. E. Carpenter to stop excavation of inorganic hot spot removal since the lead problem may be more wide spread than originally reported. The ROD states that the lead remediation level is 600 ug/kg. This level cannot change unless the Department files an Explanation of Significant Difference (ESD) which would allow the ROD to be modified if publicly accepted. The Department will not file such a document until more extensive supporting documentation is submitted in order to modify the lead cleanup level.

RE-USE OF ID-27 RUBBLE AS BACKFILL FOR BUILDING 14 FOUNDATION

During a telephone conversation of January 17, 1995 with WESTON, the Department agreed to allow L. E. Carpenter to backfill the ID-27 demolition debris into Building 14 foundation area. This area was also where hot spot #4 was located. WESTON's January 11, 1995 letter indicated that L. E. Carpenter was still waiting on the analytical results to determine if excavation was complete. I expect post excavation samples results indicated that the hot spot was fully delineated prior to rubble being disposed of. Please provide post excavation soil sampling results and a brief discussion of the disposal of this material in the Fourth Quarter Report.

Adding MW-19 and MW-20 to Quarterly Monitoring Network

During a site visit on December 6, 1994, noticeable solvent odors were recorded via OVA during the excavation of hot spot 1 (location of former UST E-3 and E-4). Former UST E-3 and E-4 contained methyl ethyl ketone (MEK) solvent and a waste solvent containing MEK. The vapor emitted from the excavation is likely due to residual levels of MEK left over from the tank removal. Previous ground water sampling results of MW-19 have indicated levels of MEK up to 6800 ug/L. Therefore, due to the new evidence of soil contamination, MW-19 shall be included in the quarterly sampling network for 2 quarters or until levels consistently indicate the absence of MEK.

Monitoring well MW-20 shall also be added to the next two quarterly sampling rounds for TCL+30 due to the close proximity to hot spot 2 (former UST E-5 and E-8) since no base neutral ground water samples have ever been performed on previous samples.

FUTURE REPLACEMENT OF MW-12

Monitor Well MW-12 was removed in order to facilitate efficient removal of contaminated soil. The excavated well casing was inspected and found to be coated with a black substance having a characteristic hydrocarbon odor. The excavation proceeded in the vicinity of former MW-12s and MW-12i, however only minimal soil contamination was visible. The excavation did not proceed below the water table, as approved in the Remedial Action Workplan dated October 1994. WESTON was concerned that further vertical excavation or horizontal excavation toward the Rockaway river would risk water intrusion into the hole creating potential backfill problems. It is therefore unknown whether significant product might still exist below the water table in the saturated zone.

The Department is concerned that ground water contamination may still exist in this region due to the field observation discussed above. Although the RAW does not call for a replacement well and ground water is known not to be discharging to the Rockaway, there are no surrounding wells (except well points) in close proximity which would indicate contamination. Provided the well point is screened properly, it may be possible the well points are wide enough to allow for a bailer to go down for sampling. Upon evaluation of the Fourth Quarter Report, further discussion of this issue will be necessary.

MAR 0 2 1995

EXTENSION OF SUBMISSION OF FOURTH QUARTER REPORT

Pursuant to my conversation with Dan Van Vorhees, WESTON, on February 17, 1995, the Department grants WESTON a 2 week extension of the submission of the Fourth Quarter Report.

Should you have any questions or comments, please contact me at (609) 633-1455. Thank you for your continuing cooperation.

Sincerely,

Christina H. Purcell

Christina H. Purcell, Case Manager
Bureau of Federal Case Management

cc: Martin O'Neill, WESTON
Laura Amend-Babock, WESTON
John Prendergast, BEERA
George Blyskun, BGWPA

RPCE\BFCM\LEC079.CHP

AUG 14 1995

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

AUG 09 1995

Mr. Christopher Anderson
Director of Environmental Affairs
L. E. Carpenter & Company
Suite 36-5000
200 Public Square
Cleveland, OH 44114-2304

Dear Mr. Anderson:

Re: L. E. Carpenter & Co. Site
Wharton Borough, Morris County

The New Jersey Department of Environmental Protection sent you a letter dated February 28, 1995 regarding field activities at the L. E. Carpenter site. I have recently spoken with Dan Van Voorhis, Weston, who informed me that the issues raised in this letter were addressed in the Quarterly Progress Report dated April 1995. While some issues were discussed in the Report, two major issues that have been delaying the soils remediation were not adequately addressed.

The first issue is the fact that bis(2-ethylhexyl)phthalate (DEHP) was found in the soil in hot spot areas A, B, C, and D. The volume of soil excavated from hot spots B and C is much greater than originally estimated due to the high levels of lead contamination. Weston is concerned that the presence of DEHP in the hot spot post-excavation soil samples will force the incineration of these soils due to the DEHP levels being greater than RCRA land ban limits. Weston has suggested disposing of this soil in the waste disposal areas. As stated in the Department's February 28, 1995 letter, the Department will not allow this because of the following:

1. The soil in question is not a hazardous waste as presented in the January 11, 1995 letter and therefore not subject to RCRA land ban restrictions.

2. The explanation of the chosen Alternative (#4) in the April 18, 1994 Record of Decision (ROD) calls for excavation and off-site disposal of "disposal area" fill which may prove inhibitory to in-situ treatment. Since lead is inhibitory to in-situ treatment and the post-excavation soil sample results indicated are above the ROD lead soil cleanup level, the Department cannot allow this soil to be consolidated within the disposal area

The second issue is the extensive lead contamination and the request by Weston to change the lead remediation level of 600 ug/kg. As stated in the Department's February 28, 1995 letter, this level cannot change unless the Department files an Explanation of Significant Differences (ESD) which will not be done until more extensive supporting documentation is provided. Therefore, if L. E. Carpenter would like to pursue this further, the lead contamination must be adequately delineated. Once an accurate volume of contaminated soil is determined, the Department will determine if it is necessary to modify the lead cleanup level.

In summary, L.E. Carpenter must provide the Department with a general work plan for the delineation of the lead contaminated soil within thirty days from the receipt of this letter for excavation and off-site disposal of the inorganic hot spot soils must continue using 600 ug/kg as the cleanup level for lead.

Please contact me at (609) 633-1455 if you have any questions.

Sincerely,

Gwen Bar

Gwen Barunas, Case Manager
Bureau of Federal Case Management

c: John Prendergast, BEERA
Dan Van Voorhis, Weston

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

March 1, 1994

Mr. Thomas J. Dolce, Principal
GZA-AET Regulatory Services
140 Broadway
Providence, RI 02903

Dear Mr. Dolce:

This letter responds to your letter dated December 22, 1993, in which you requested clarification of the land disposal restrictions (LDR) requirements. Three questions were included in the letter. Each question is summarized and answered below.

1) Can spent paint that displays the characteristics of ignitability (D001) and toxicity for lead (D008) be blended and used as a hazardous waste fuel, or would it be considered illegal dilution of the lead component?

The LDR regulations require that all hazardous components in a waste stream be treated to meet the applicable treatment standards before they are land disposed. Because the waste paint would fall into the D001 high total organic constituents (TOC) subcategory, the treatment standard is expressed in 40 CFR 268.42 as required methods of treatment (fuel substitution, incineration, or recovery of organics); however, because the waste must be treated to meet the treatment standard for the hazardous lead component (assuming that because the waste failed the toxicity characteristic for lead it would also fail the extraction procedure (EP)), fuel substitution alone in this case would not be sufficient. The combustion residual must be treated to meet the treatment standard for EP lead found at 40 CFR 266.41. However, combustion would not be considered impermissible dilution of lead.

2) Technical grade toluene solvent is used to clean paint spray guns. The paint contains xylene and methyl ethyl ketone. The waste, therefore, contains toluene and xylene and methyl ethyl ketone. Does just the F001-F005 toluene treatment standard apply or do the standards for xylene and methyl ethyl ketone also apply? Does the treatment standard for D001 also apply?

The treatment standards for F001-F009 apply only to spent solvents, thus compliance would be required with only the toluene treatment standard because it is the only spent solvent component (the xylene and methyl ethyl ketone were ingredients in the paint and are thus not spent solvents). Furthermore, there is no need to meet the D001 treatment standard in addition to the F005 toluene treatment standard because the treatment standard for the listed waste will address the hazardous characteristic of ignitability.

3) A debris is contaminated with an F005 solvent, 2-ethoxysthenol. Is it subject to the treatment standard in § 268.42, or to the alternative treatment standards for hazardous debris in § 268.45 (that references §§ 268.41 and 268.43, but does not reference § 268.42)?

While it is acceptable to meet the treatment standard in 40 CFR 268.42 for this hazardous debris, the alternative treatment standards in 40 CFR 268.45 may also be used. Section 268.42 lists those wastes for which EPA established a treatment method as the standard. The Agency fully intends that debris contaminated with those wastes be subject to the alternative debris standards.

The applicability of the alternative debris standards to debris contaminated with wastes for which EPA has specified a required method of treatment has been a source of confusion not only to you but to others as well. The confusion stems from the fact that only the wastes themselves, and not the waste constituents, are listed in 268.42. The Agency will be publishing a clarification of the confusing language of 268.45(b) (2) so that it will read; "The contaminants subject to treatment for debris that is contaminated with a prohibited listed hazardous waste are those constituents or wastes for which BDAT standards are established for the wastes under §§ 268.41, 268.42, and 268.43.".

I hope you find these responses helpful. If you have further questions, please contact Rhonda Craig of the Waste Treatment Branch on 703-308-8771.

Sincerely,

Michael Shapiro, Director
Office of Solid Waste
cc: Rhonda Craig

FaxBack # 11815

Appendix I
Analytical Results from Blue Marsh Laboratories

Douglassville Location:
1605 Benjamin Franklin Highway
Douglassville, PA 19518
Phone: (610) 327-8196
Fax: (610) 327-6864

NJ DEP Cert #77925
PA DEP Cert #06-409

Blue Marsh

LABORATORIES • INC

Professional testing for the critical decision

Princeton Location:
267 Wall Street
Princeton, NJ 08540
Phone: (609) 924-5151
Fax: (609) 924-9692

NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Attn: David Pohwat
Project: LE Carpenter
Date Received: *19-Nov-01*

Lab#: D014582-002
Sample ID: Lead Contaminated Soil
Sample Type: Soil
Collect Date: 15-Nov-01
Collected By: Client
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
TCLP Extract							
	TCLP extraction	done			1311	DAG 0951	11/21/01
TCLP-HG							
	Mercury, TCLP	< 0.002	mg/L	0.002	7470A	DAG 0939	11/29/01
TCLP-RCRA7							
	Arsenic, TCLP	< 0.05	mg/L	0.05	6010B	KLH	12/5/01
	Barium, TCLP	1.930	mg/L	0.004	6010B	KLH	12/5/01
	Cadmium, TCLP	H 1.680	mg/L	0.004	6010B	KLH	12/3/01
	Chromium, TCLP	0.520	mg/L	0.004	6010B	KLH	12/3/01
	Lead, TCLP	H 26.00	mg/L	0.18	6010B	KLH	12/5/01
	Selenium, TCLP	< 0.05	mg/L	0.05	6010B	KLH	12/5/01
	Silver, TCLP	0.005	mg/L	0.004	6010B	KLH	12/3/01
TCLP-VOL							
	Benzene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	Carbon tetrachloride, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	Chlorobenzene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	Chloroform, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	1,4-Dichlorobenzene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	1,2-Dichloroethane, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	1,1-Dichloroethylene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	Methyl ethyl ketone, TCLP	< 0.100	mg/L	0.1	8260B	DRA 0058	11/27/01
	Tetrachloroethylene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	Trichloroethylene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
	Vinyl Chloride, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0058	11/27/01
VOL-8260B-sd							
	Dichlorofluoromethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Chloromethane (Methyl Chloride)	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Vinyl chloride	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Bromomethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Chloroethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014582-002
Sample ID: Lead Contaminated Soil
Sample Type: Soil

Attn: David Pohwat
Project: LE Carpenter

Collect Date: 15-Nov-01
Collected By: Client

Date Received: *19-Nov-01*
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	Trichlorofluoromethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,1-Dichloroethene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Acetone	< 45.86	mg/Kg	45.86	8260B	DRA 2017	11/29/01
	Methylene chloride (Dichlorometh	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	t-Butyl alcohol	< 45.86	mg/Kg	45.86	8260B	DRA 2017	11/29/01
	trans-1,2-dichloroethene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Methyl tert-butyl ether (MTBE)	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,1-Dichloroethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	cis-1,2-Dichloroethene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	2,2-Dichloropropane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	2-Butanone (MEK)	< 45.86	mg/Kg	45.86	8260B	DRA 2017	11/29/01
	Bromochloromethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Chloroform	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,1,1-Trichloroethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,1-Dichloropropene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Carbon tetrachloride	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Benzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2-Dichloroethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Trichloroethene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2-Dichloropropane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Dibromomethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Bromodichloromethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	cis-1,3-Dichloropropene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	4-Methyl-2-pentanone (MIBK)	< 45.86	mg/Kg	45.86	8260B	DRA 2017	11/29/01
	Toluene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	trans-1,3-dichloropropene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,1,2-Trichloroethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Tetrachloroethene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,3-Dichloropropane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	2-Hexanone	< 45.86	mg/Kg	45.86	8260B	DRA 2017	11/29/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014582-002
Sample ID: Lead Contaminated Soil
Sample Type: Soil

Attn: David Pohwat
Project: LE Carpenter

Collect Date: 15-Nov-01
Collected By: Client

Date Received: *19-Nov-01*
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	Dibromochloromethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2-Dibromoethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Chlorobenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,1,1,2-Tetrachloroethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Ethyl benzene	353.95	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	m,p-Xylene	< 1255.67	mg/Kg	22.93	8260B	DRA 2017	11/29/01
	o-Xylene	110.07	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Styrene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Bromoform	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Isopropylbenzene (Cumene)	7.20	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Bromobenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,1,2,2-Tetrachloroethane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2,3-Trichloropropane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	N-Propylbenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	2-Chlorotoluene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	4-Chlorotoluene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,3,5-Trimethylbenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	tert-Butylbenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2,4-Trimethylbenzene	45.13	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	sec-Butylbenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,3-Dichlorobenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	p-Isopropyltoluene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,4-Dichlorobenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2-Dichlorobenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	n-Butylbenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2-Dibromo-3-chloropropane	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2,4-Trichlorobenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Hexachloro-1,3-butadiene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	Naphthalene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01
	1,2,3-Trichlorobenzene	< 4.59	mg/Kg	4.59	8260B	DRA 2017	11/29/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014582-002
Sample ID: Lead Contaminated Soil
Sample Type: Soil

Attn: David Pohwat
Project: LE Carpenter

Collect Date: 15-Nov-01
Collected By: Client

Date Received: *19-Nov-01*
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
FP							
	Flashpoint, closed-cup	102.	deg F	1.	1010	JAH 0915	11/20/01
pH-sd							
	pH	8.41	s.u.	0.01	9045C	JAM 1710	11/19/01
Cn,RX-sd							
	Cyanide, reactive	< 0.06	mg/kg	0.06	SW-846	AT/JM 1530	12/4/01
Sulfid,RX-sd							
	Sulfide, reactive	< 12.	mg/kg	12.	SW-846	JAH 1115	11/20/01
TCLP-SEMIV							
	o-Cresol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	m-Cresol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	p-Cresol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	2,4-Dinitrotoluene, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Hexachlorobenzene, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Hexachloro-1,3-butadiene, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Hexachloroethane, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Nitrobenzene, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Pentachlorophenol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Pyridine, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	2,4,5-Trichlorophenol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	2,4,6-Trichlorophenol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
RCRA7-6010-							
	Arsenic	31.3	mg/kg	6.3	6010B	KLH 1700	12/5/01
	Barium	384.9	mg/kg	0.6	6010B	KLH 1700	12/5/01
	Cadmium	124.5	mg/kg	0.6	6010B	KLH 1700	12/5/01
	Chromium	1805.3	mg/kg	0.6	6010B	KLH 1700	12/5/01
	Lead	247.0	mg/kg	2.5	6010B	KLH 1700	12/5/01
	Selenium	22.2	mg/kg	6.3	6010B	KLH 1700	12/5/01
	Silver	< 0.6	mg/kg	0.6	6010B	KLH 1700	12/5/01

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Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Attn: David Pohwat
Project: LE Carpenter

Date Received: *19-Nov-01*

Lab#: D014582-002
Sample ID: Lead Contaminated Soil
Sample Type: Soil

Collect Date: 15-Nov-01
Collected By: Client

Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
HG-7471A							
	Mercury	1.15	mg/kg	0.23	7471A	DAG 0935	11/29/01
Solid,%							
	Percent Solids	86.7	%	0.1	D2974	ACT 1600	11/20/01

Reviewed and Approved by

Michael J. McKenna IDW

Michael J. McKenna
Laboratory Director

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Attn: David Pohwat
Project: LeCarpenter/ MA Hanna
Date Received: *21-Nov-01*

RECEIVED DEC 0 5 2001

Lab#: D014651-001
Sample ID: Copper Contaminated Soil
Sample Type: Soil
Collect Date: 13-Nov-01
Collected By: Client
Report Date: *30-Nov-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
TCLP Extract							
	TCLP extraction	done			1311	DAG 0625	11/28/01
TCLP-HG							
	Mercury, TCLP	< 0.002	mg/L	0.002	7470A	DAG 0939	11/29/01
TCLP-RCRA1							
	Arsenic, TCLP	< 0.06	mg/L	0.06	6010B	KLH 2150	11/28/01
	Barium, TCLP	0.266	mg/L	0.005	6010B	KLH 2150	11/28/01
	Cadmium, TCLP	< 0.005	mg/L	0.005	6010B	KLH 2150	11/28/01
	Chromium, TCLP	< 0.005	mg/L	0.005	6010B	KLH 2150	11/28/01
	Copper, TCLP	137.163	mg/L	0.005	6010B	KLH 2150	11/28/01
	Lead, TCLP	0.74	mg/L	0.02	6010B	KLH 2150	11/28/01
	Nickel, TCLP	0.309	mg/L	0.005	6010B	KLH 2150	11/28/01
	Silver, TCLP	< 0.005	mg/L	0.005	6010B	KLH 2150	11/28/01
	Selenium, TCLP	< 0.06	mg/L	0.06	6010B	KLH 2150	11/28/01
	Zinc, TCLP	2.767	mg/L	0.005	6010B	KLH 2150	11/28/01
	Tin	< 0.1	mg/L	0.1	6010B	KLH 2150	11/28/01
RCRA10-6010							
	Arsenic	< 5.4	mg/kg	5.4	6010B	KLH 1530	11/30/01
	Barium	46.9	mg/kg	0.5	6010B	KLH 1530	11/30/01
	Cadmium	< 0.5	mg/kg	0.5	6010B	KLH 1530	11/30/01
	Chromium	41.0	mg/kg	0.5	6010B	KLH 1530	11/30/01
	Copper	25056.6	mg/kg	2.7	6010B	KLH 1530	11/30/01
	Lead	339.9	mg/kg	2.2	6010B	KLH 1530	11/30/01
	Nickel	52.8	mg/kg	0.5	6010B	KLH 1530	11/30/01
	Selenium	8.3	mg/kg	5.4	6010B	KLH 1530	11/30/01
	Silver	< 0.5	mg/kg	0.5	6010B	KLH 1530	11/30/01
	Zinc	297.6	mg/kg	0.5	6010B	KLH 1530	11/30/01
	Tin	< 5.4	mg/kg	5.4	6010B	KLH 1530	11/30/01
HG-7471A							
	Mercury	0.33	mg/kg	0.16	7471A	DAG 1205	11/29/01

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014651-001
Sample ID: Copper Contaminated Soil
Sample Type: Soil

Attn: David Pohwat
Project: LeCarpenter/ MA Hanna

Collect Date: 13-Nov-01
Collected By: Client

Date Received: *21-Nov-01*
Report Date: *30-Nov-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
VOL-8260B-sd							
	Dichlorofluoromethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Chloromethane (Methyl Chloride)	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Vinyl chloride	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Bromomethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Chloroethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Trichlorofluoromethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,1-Dichloroethene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Acetone	< 1.13	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	Methylene chloride (Dichlorometh	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	t-Butyl alcohol	< 1.13	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	trans-1,2-dichloroethene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Methyl tert-butyl ether (MTBE)	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,1-Dichloroethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	cis-1,2-Dichloroethene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	2,2-Dichloropropane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	2-Butanone (MEK)	< 1.13	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	Bromochloromethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Chloroform	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,1,1-Trichloroethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,1-Dichloropropene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Carbon tetrachloride	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Benzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,2-Dichloroethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Trichloroethene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,2-Dichloropropane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Dibromomethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Bromodichloromethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	cis-1,3-Dichloropropene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	4-Methyl-2-pentanone (MIBK)	< 1.13	mg/Kg	1.13	8260B	DRA 0246	11/28/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014651-001
Sample ID: Copper Contaminated Soil
Sample Type: Soil

Attn: David Pohwat
Project: LeCarpenter/ MA Hanna

Collect Date: 13-Nov-01
Collected By: Client

Date Received: *21-Nov-01*
Report Date: *30-Nov-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	Toluene	0.44	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	trans-1,3-dichloropropene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,1,2-Trichloroethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Tetrachloroethene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,3-Dichloropropane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	2-Hexanone	< 1.13	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	Dibromochloromethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,2-Dibromoethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Chlorobenzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,1,1,2-Tetrachloroethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Ethyl benzene	17.59	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	m,p-Xylene	144.44	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	o-Xylene	104.66	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	Styrene	3.06	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	Bromoform	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Isopropylbenzene (Cumene)	2.81	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	Bromobenzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,1,2,2-Tetrachloroethane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,2,3-Trichloropropane	1.81	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	N-Propylbenzene	2.05	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	2-Chlorotoluene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	4-Chlorotoluene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,3,5-Trimethylbenzene	38.58	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	tert-Butylbenzene	0.22	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,2,4-Trimethylbenzene	180.31	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	sec-Butylbenzene	3.42	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	1,3-Dichlorobenzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	p-Isopropyltoluene	3.68	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	1,4-Dichlorobenzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,2-Dichlorobenzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Attn: David Pohwat
Project: LeCarpenter/ MA Hanna
Date Received: *21-Nov-01*

Lab#: D014651-001
Sample ID: Copper Contaminated Soil
Sample Type: Soil
Collect Date: 13-Nov-01
Collected By: Client
Report Date: *30-Nov-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	n-Butylbenzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,2-Dibromo-3-chloropropane	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	1,2,4-Trichlorobenzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Hexachloro-1,3-butadiene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
	Naphthalene	27.61	mg/Kg	1.13	8260B	DRA 0246	11/28/01
	1,2,3-Trichlorobenzene	< 0.11	mg/Kg	0.11	8260B	DRA 0246	11/28/01
SV-8270C-sd							
	2-Methylphenol	274.	ug/kg	111	8270C	ACM 1528	11/30/01
	4-Methylphenol	< 111.	ug/kg	111.	8270C	ACM 1528	11/30/01
	Benzoic acid	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Aniline	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Benzyl alcohol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Naphthalene	4153.	ug/kg	111	8270C	ACM 1528	11/30/01
	Phenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2-Chlorophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	1,3-Dichlorobenzene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	1,4-Dichlorobenzene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	1,2-Dichlorobenzene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Hexachloroethane	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Nitrobenzene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Isophorone	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	1,2,4-Trichlorobenzene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	N-Nitrosodimethylamine	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Pyridine	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	bis(2-Chloroethyl)ether	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	bis(2-Chloroisopropyl)ether	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	N-Nitroso-Di-N-Propylamine	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	bis(2-Chloroethoxy)methane	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,4,5-Trichlorophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2-Methylnaphthalene	2183.	ug/kg	111	8270C	ACM 1528	11/30/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014651-001
Sample ID: Copper Contaminated Soil
Sample Type: Soil

Attn: David Pohwat
Project: LeCarpenter/ MA Hanna

Collect Date: 13-Nov-01
Collected By: Client

Date Received: *21-Nov-01*
Report Date: *30-Nov-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	4-Chloroaniline	129.	ug/kg	111	8270C	ACM 1528	11/30/01
	2-Nitroaniline	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	3-Nitroaniline	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	4-Nitroaniline	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Acenaphthylene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2-Nitrophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,4-Dimethylphenol	1627.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,4-Dichlorophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Hexachloro-1,3-butadiene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Hexachlorocyclopentadiene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2-Chloronaphthalene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,6-Dinitrotoluene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Dimethylphthalate	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Dibenzofuran	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Acenaphthene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Fluorene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,6-Dichlorophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	4-Chloro-3-methylphenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,4,6-Trichlorophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,4-Dinitrophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	4-Nitrophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,3,4,6-Tetrachorophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2-Methyl-4,6-Dinitrophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Pentachlorophenol	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	2,4-Dinitrotoluene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Hexachlorobenzene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Azobenzene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Diethylphthalate	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	4-Chlorophenyl-phenylether	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	N-Nitrosodiphenylamine	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014651-001
Sample ID: Copper Contaminated Soil
Sample Type: Soil

Attn: David Pohwat
Project: LeCarpenter/ MA Hanna

Collect Date: 13-Nov-01
Collected By: Client

Date Received: *21-Nov-01*
Report Date: *30-Nov-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	1,2-Diphenylhydrazine	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	4-Bromophenyl-phenylether	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Benzidine	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	3,3'-Dichlorobenzidine	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Phenanthrene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Anthracene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Carbazole	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Fluoranthene	590.	ug/kg	111	8270C	ACM 1528	11/30/01
	Pyrene	891.	ug/kg	111	8270C	ACM 1528	11/30/01
	Benzo(a)anthracene	308.	ug/kg	111	8270C	ACM 1528	11/30/01
	Chrysene	363.	ug/kg	111	8270C	ACM 1528	11/30/01
	Di-n-butylphthalate	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Butylbenzylphthalate	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Benzo(b)fluoranthene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Benzo(k)fluoranthene	416.	ug/kg	111	8270C	ACM 1528	11/30/01
	Benzo(a)pyrene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Indeno(1,2,3-cd)pyrene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Dibenzo(a,h))anthracene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	Benzo(ghi)perylene	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	DI-n-octylphthalate	< 111.	ug/kg	111	8270C	ACM 1528	11/30/01
	bis(2-Ethylhexyl)phthalate	6627.	ug/kg	111	8270C	ACM 1528	11/30/01
PCB-8082-sd							
	Aroclor-1016	< 0.06	mg/kg	0.06	8082	ACM 1200	11/29/01
	Aroclor-1221	< 0.28	mg/kg	0.28	8082	ACM 1200	11/29/01
	Aroclor-1232	< 0.06	mg/kg	0.06	8082	ACM 1200	11/29/01
	Aroclor-1242	< 0.06	mg/kg	0.06	8082	ACM 1200	11/29/01
	Aroclor-1248	< 0.06	mg/kg	0.06	8082	ACM 1200	11/29/01
	Aroclor-1254	< 0.06	mg/kg	0.06	8082	ACM 1200	11/29/01
	Aroclor-1260	< 0.06	mg/kg	0.06	8082	ACM 1200	11/29/01

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014651-001
Sample ID: Copper Contaminated Soil
Sample Type: Soil

Attn: David Pohwat
Project: LeCarpenter/ MA Hanna

Collect Date: 13-Nov-01
Collected By: Client

Date Received: *21-Nov-01*
Report Date: *30-Nov-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
pH-sd							
	pH	6.56	s.u.	0.01	9045C	DLS 1706	11/26/01
FP							
	Flashpoint, closed-cup	>200.	deg F	1.	1010	JAH 0830	11/28/01
Cn,RX-sd							
	Cyanide, reactive	< 6.	mg/kg	6.	SW-846	JAH 1015	11/29/01
Sulfid,RX-sd							
	Sulfide, reactive	< 11.	mg/kg	11.	SW-846	JAH 1015	11/29/01
Solid,%							
	Percent Solids	89.7	%	0.1	D2974	ACT 1530	11/26/01

Reviewed and Approved by

Michael J. McKenna

Michael J. McKenna
Laboratory Director

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Attn: David Pohwat
Project: LE Carpenter
Date Received: *19-Nov-01*

RECEIVED DEC 12 2001

Lab#: D014582-001
Sample ID: Paint Sludge
Sample Type: Soil
Collect Date: 15-Nov-01
Collected By: Client
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
TCLP Extract							
	TCLP extraction	done			1311	DAG 0951	11/21/01
TCLP-HG							
	Mercury, TCLP	< 0.002	mg/L	0.002	7470A	DAG 0939	11/29/01
TCLP-RCRA7							
	Arsenic, TCLP	< 0.05	mg/L	0.05	6010B	KLH	12/5/01
	Barium, TCLP	0.779	mg/L	0.004	6010B	KLH	12/5/01
	Cadmium, TCLP	0.306	mg/L	0.004	6010B	KLH	12/3/01
	Chromium, TCLP	0.059	mg/L	0.004	6010B	KLH	12/3/01
	Lead, TCLP	H 101.00	mg/L	0.18	6010B	KLH	12/5/01
	Selenium, TCLP	< 0.05	mg/L	0.05	6010B	KLH	12/5/01
	Silver, TCLP	< 0.004	mg/L	0.004	6010B	KLH	12/3/01
TCLP-VOL							
	Benzene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	Carbon tetrachloride, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	Chlorobenzene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	Chloroform, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	1,4-Dichlorobenzene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	1,2-Dichloroethane, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	1,1-Dichloroethylene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	Methyl ethyl ketone, TCLP	< 0.100	mg/L	0.1	8260B	DRA 0028	11/27/01
	Tetrachloroethylene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	Trichloroethylene, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
	Vinyl Chloride, TCLP	< 0.010	mg/L	0.01	8260B	DRA 0028	11/27/01
VOL-8260B-sd							
	Dichlorofluoromethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Chloromethane (Methyl Chloride)	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Vinyl chloride	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Bromomethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Chloroethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014582-001
Sample ID: Paint Sludge
Sample Type: Soil

Attn: David Pohwat
Project: LE Carpenter

Collect Date: 15-Nov-01
Collected By: Client

Date Received: *19-Nov-01*
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	Trichlorofluoromethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,1-Dichloroethene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Acetone	< 2.11	mg/Kg	2.11	8260B	DRA 0346	11/28/01
	Methylene chloride (Dichlorometh	0.27	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	t-Butyl alcohol	< 2.11	mg/Kg	2.11	8260B	DRA 0346	11/28/01
	trans-1,2-dichloroethene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Methyl tert-butyl ether (MTBE)	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,1-Dichloroethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	cis-1,2-Dichloroethene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	2,2-Dichloropropane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	2-Butanone (MEK)	< 2.11	mg/Kg	2.11	8260B	DRA 0346	11/28/01
	Bromochloromethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Chloroform	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,1,1-Trichloroethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,1-Dichloropropene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Carbon tetrachloride	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Benzene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2-Dichloroethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Trichloroethene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2-Dichloropropane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Dibromomethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Bromodichloromethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	cis-1,3-Dichloropropene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	4-Methyl-2-pentanone (MIBK)	< 2.11	mg/Kg	2.11	8260B	DRA 0346	11/28/01
	Toluene	6.75	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	trans-1,3-dichloropropene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,1,2-Trichloroethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Tetrachloroethene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,3-Dichloropropane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	2-Hexanone	< 2.11	mg/Kg	2.11	8260B	DRA 0346	11/28/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014582-001
Sample ID: Paint Sludge
Sample Type: Soil

Attn: David Pohwat
Project: LE Carpenter

Collect Date: 15-Nov-01
Collected By: Client

Date Received: *19-Nov-01*
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	Dibromochloromethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2-Dibromoethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Chlorobenzene	1.33	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,1,1,2-Tetrachloroethane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Ethyl benzene	148.45	mg/Kg	4.22	8260B	DRA 0346	11/28/01
	m,p-Xylene	655.62	mg/Kg	4.22	8260B	DRA 0346	11/28/01
	o-Xylene	79.47	mg/Kg	4.22	8260B	DRA 0346	11/28/01
	Styrene	16.59	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Bromoform	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Isopropylbenzene (Cumene)	14.99	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Bromobenzene	1.59	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,1,2,2-Tetrachloroethane	2.99	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2,3-Trichloropropane	0.98	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	N-Propylbenzene	15.65	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	2-Chlorotoluene	23.26	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	4-Chlorotoluene	6.47	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,3,5-Trimethylbenzene	8.58	mg/Kg	4.22	8260B	DRA 0346	11/28/01
	tert-Butylbenzene	4.40	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2,4-Trimethylbenzene	16.60	mg/Kg	4.22	8260B	DRA 0346	11/28/01
	sec-Butylbenzene	4.17	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,3-Dichlorobenzene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	p-Isopropyltoluene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,4-Dichlorobenzene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2-Dichlorobenzene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	n-Butylbenzene	7.02	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2-Dibromo-3-chloropropane	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2,4-Trichlorobenzene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Hexachloro-1,3-butadiene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	Naphthalene	0.58	mg/Kg	0.21	8260B	DRA 0346	11/28/01
	1,2,3-Trichlorobenzene	< 0.21	mg/Kg	0.21	8260B	DRA 0346	11/28/01

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NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Lab#: D014582-001
Sample ID: Paint Sludge
Sample Type: Soil

Attn: David Pohwat
Project: LE Carpenter

Collect Date: 15-Nov-01
Collected By: Client

Date Received: *19-Nov-01*
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
FP							
	Flashpoint, closed-cup	108.	deg F	1.	1010	JAH 0915	11/20/01
pH-sd							
	pH	8.42	s.u.	0.01	9045C	JAM 1710	11/19/01
Cn,RX-sd							
	Cyanide, reactive	< 0.06	mg/kg	0.06	SW-846	DAW 1400	11/20/01
Sulfid,RX-sd							
	Sulfide, reactive	< 12.	mg/kg	12.	SW-846	JAH 1115	11/20/01
TCLP-SEMIV							
	o-Cresol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	m-Cresol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	p-Cresol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	2,4-Dinitrotoluene, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Hexachlorobenzene, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Hexachloro-1,3-butadiene, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Hexachloroethane, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Nitrobenzene, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Pentachlorophenol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	Pyridine, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	2,4,5-Trichlorophenol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
	2,4,6-Trichlorophenol, TCLP	< 0.01	mg/L	0.01	8270C	ACM 1200	12/3/01
RCRA7-6010-							
	Arsenic	< 5.8	mg/kg	5.8	6010B	KLH 2150	11/28/01
	Barium	170.6	mg/kg	0.6	6010B	KLH 2150	11/28/01
	Cadmium	45.2	mg/kg	0.6	6010B	KLH 2150	11/28/01
	Chromium	437.6	mg/kg	0.6	6010B	KLH 2150	11/28/01
	Lead	2321.5	mg/kg	2.3	6010B	KLH 2150	11/28/01
	Selenium	< 5.8	mg/kg	5.8	6010B	KLH 2150	11/28/01
	Silver	< 0.6	mg/kg	0.6	6010B	KLH 2150	11/28/01

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Client: Environmental Waste Minimization,
719 Roble Road
Allentown PA 18109

Attn: David Pohwat
Project: LE Carpenter
Date Received: *19-Nov-01*

Lab#: D014582-001
Sample ID: Paint Sludge
Sample Type: Soil
Collect Date: 15-Nov-01
Collected By: Client
Report Date: *06-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
HG-7471A							
	Mercury	0.38	mg/kg	0.17	7471A	DAG 0935	11/29/01
Solid,%							
	Percent Solids	85.3	%	0.1	D2974	ACT 1600	11/20/01

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization
719 Roble Road
Allentown PA 18109

Lab#: D014641-001
Sample ID: Free Product Layer
Sample Type: Oil

Attn: David Pohwat
Project: LE Carpenter/ MA Hanna

Collect Date: 10-Nov-01
Collected By: Client

Date Received: *12-Dec-01*
Report Date: *13-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
TCLP Extract							
	TCLP extraction	done			1311	DAG 0625	11/28/01
TCLP-HG							
	Mercury, TCLP	< 0.002	mg/L	0.002	7470A	DAG 0939	11/29/01
TCLP-PP12							
	Antimony, TCLP	< 0.02	mg/L	0.02	6010B	KLH 2150	11/28/01
	Arsenic, TCLP	< 0.05	mg/L	0.05	6010B	KLH 2150	11/28/01
	Beryllium, TCLP	< 0.004	mg/L	0.004	6010B	KLH 2150	11/28/01
	Cadmium, TCLP	< 0.004	mg/L	0.004	6010B	KLH 2150	11/28/01
	Chromium, TCLP	< 0.004	mg/L	0.004	6010B	KLH 2150	11/28/01
	Copper, TCLP	< 0.004	mg/L	0.004	6010B	KLH 2150	11/28/01
	Lead, TCLP	< 0.02	mg/L	0.02	6010B	KLH 2150	11/28/01
	Nickel, TCLP	< 0.004	mg/L	0.004	6010B	KLH 2150	11/28/01
	Selenium, TCLP	< 0.05	mg/L	0.05	6010B	KLH 2150	11/28/01
	Silver, TCLP	< 0.004	mg/L	0.004	6010B	KLH 2150	11/28/01
	Thallium, TCLP	< 0.05	mg/L	0.05	6010B	KLH 2150	11/28/01
	Zinc, TCLP	0.024	mg/L	0.004	6010B	KLH 2150	11/28/01
	Tin, TCLP	< .05	mg/L	.05	6010B	KLH 2150	11/28/01
FP							
	Flashpoint, closed-cup	L 62.	deg F	1.	1010	JAH 1030	11/30/01
HG-7471A							
	Mercury	0.02	mg/kg	0.02	7471A	DAG 0935	11/29/01
PP12-6010-S							
	Antimony	0.4	mg/kg	0.4	6010B	KLH 1700	12/5/01
	Arsenic	< 1.0	mg/kg	1.0	6010B	KLH 1700	12/5/01
	Beryllium	< 0.1	mg/kg	0.1	6010B	KLH 1700	12/5/01
	Cadmium	< 0.1	mg/kg	0.1	6010B	KLH 1700	12/5/01
	Chromium	0.3	mg/kg	0.1	6010B	KLH 1700	12/5/01
	Copper	0.1	mg/kg	0.1	6010B	KLH 1700	12/5/01
	Lead	< 0.4	mg/kg	0.4	6010B	KLH 1700	12/5/01

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization
719 Roble Road
Allentown PA 18109

Lab#: D014641-001
Sample ID: Free Product Layer
Sample Type: Oil

Attn: David Pohwat
Project: LE Carpenter/ MA Hanna

Collect Date: 10-Nov-01
Collected By: Client

Date Received: *12-Dec-01*
Report Date: *13-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	Nickel	< 0.1	mg/kg	0.1	6010B	KLH 1700	12/5/01
	Selenium	1.2	mg/kg	1.0	6010B	KLH 1700	12/5/01
	Silver	< 0.1	mg/kg	0.1	6010B	KLH 1700	12/5/01
	Thallium	< 1.0	mg/kg	1.0	6010B	KLH 1700	12/5/01
	Zinc	< 0.1	mg/kg	0.1	6010B	KLH 1700	12/5/01
	Tin	30.3	mg/kg	0.1	6010B	KLH 1700	12/5/01
Solid,%							
	Percent Solids	76.9	%	0.1	D2974	CMG 1400	11/29/01
VOL-8260B-sd							
	Dichlorofluoromethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Chloromethane (Methyl Chloride)	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Vinyl chloride	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Bromomethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Chloroethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Trichlorofluoromethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,1-Dichloroethene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Acetone	< 775.19	mg/Kg	775.19	8260B	DRA 0036	12/1/01
	Methylene chloride (Dichlorometh	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	t-Butyl alcohol	< 775.19	mg/Kg	775.19	8260B	DRA 0036	12/1/01
	trans-1,2-dichloroethene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Methyl tert-butyl ether (MTBE)	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,1-Dichloroethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	cis-1,2-Dichloroethene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	2,2-Dichloropropane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	2-Butanone (MEK)	< 775.19	mg/Kg	775.19	8260B	DRA 0036	12/1/01
	Bromochloromethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Chloroform	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,1,1-Trichloroethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,1-Dichloropropene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Carbon tetrachloride	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization
719 Roble Road
Allentown PA 18109

Lab#: D014641-001
Sample ID: Free Product Layer
Sample Type: Oil

Attn: David Pohwat
Project: LE Carpenter/ MA Hanna

Collect Date: 10-Nov-01
Collected By: Client

Date Received: *12-Dec-01*
Report Date: *13-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	Benzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2-Dichloroethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Trichloroethene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2-Dichloropropane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Dibromomethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Bromodichloromethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	cis-1,3-Dichloropropene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	4-Methyl-2-pentanone (MIBK)	< 775.19	mg/Kg	775.19	8260B	DRA 0036	12/1/01
	Toluene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	trans-1,3-dichloropropene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,1,2-Trichloroethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Tetrachloroethene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,3-Dichloropropane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	2-Hexanone	< 775.19	mg/Kg	775.19	8260B	DRA 0036	12/1/01
	Dibromochloromethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2-Dibromoethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Chlorobenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,1,1,2-Tetrachloroethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Ethyl benzene	0.311	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	m,p-Xylene	0.983	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	o-Xylene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Styrene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Bromoform	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Isopropylbenzene (Cumene)	492.25	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Bromobenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,1,2,2-Tetrachloroethane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2,3-Trichloropropane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	N-Propylbenzene	296.12	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	2-Chlorotoluene	82.95	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	4-Chlorotoluene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization
719 Roble Road
Allentown PA 18109

Lab#: D014641-001
Sample ID: Free Product Layer
Sample Type: Oil

Attn: David Pohwat
Project: LE Carpenter/ MA Hanna

Collect Date: 10-Nov-01
Collected By: Client

Date Received: *12-Dec-01*
Report Date: *13-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	1,3,5-Trimethylbenzene	471.32	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	tert-Butylbenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2,4-Trimethylbenzene	889.15	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	sec-Butylbenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,3-Dichlorobenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	p-Isopropyltoluene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,4-Dichlorobenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2-Dichlorobenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	n-Butylbenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2-Dibromo-3-chloropropane	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2,4-Trichlorobenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Hexachloro-1,3-butadiene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	Naphthalene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
	1,2,3-Trichlorobenzene	< 77.52	mg/Kg	77.52	8260B	DRA 0036	12/1/01
SV-8270C-sd							
	2-Methylphenol	160.	ug/kg	130	8270C	ACM 1605	11/30/01
	4-Methylphenol	< 130.	ug/kg	130.	8270C	ACM 1605	11/30/01
	Benzoic acid	743.	ug/kg	130	8270C	ACM 1605	11/30/01
	Aniline	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Benzyl alcohol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Naphthalene	692.	ug/kg	130	8270C	ACM 1605	11/30/01
	Phenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2-Chlorophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	1,3-Dichlorobenzene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	1,4-Dichlorobenzene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	1,2-Dichlorobenzene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Hexachloroethane	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Nitrobenzene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Isophorone	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	1,2,4-Trichlorobenzene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01

Douglassville Location:
1605 Benjamin Franklin Highway
Douglassville, PA 19518
Phone: (610) 327-8196
Fax: (610) 327-6864

NJ DEP Cert #77925
PA DEP Cert #06-409

Blue Marsh

LABORATORIES • INC

Professional testing for the critical decision

Princeton Location:
267 Wall Street
Princeton, NJ 08540
Phone: (609) 924-5151
Fax: (609) 924-9692

NJ DEP Cert #11198

- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization
719 Roble Road
Allentown PA 18109

Lab#: D014641-001
Sample ID: Free Product Layer
Sample Type: Oil

Attn: David Pohwat
Project: LE Carpenter/ MA Hanna

Collect Date: 10-Nov-01
Collected By: Client

Date Received: *12-Dec-01*
Report Date: *13-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	N-Nitrosodimethylamine	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Pyridine	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	bis(2-Chloroethyl)ether	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	bis(2-Chloroisopropyl)ether	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	N-Nitroso-Di-N-Propylamine	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	bis(2-Chloroethoxy)methane	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,4,5-Trichlorophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2-Methylnaphthalene	490.	ug/kg	130	8270C	ACM 1605	11/30/01
	4-Chloroaniline	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2-Nitroaniline	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	3-Nitroaniline	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	4-Nitroaniline	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Acenaphthylene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2-Nitrophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,4-Dimethylphenol	3233.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,4-Dichlorophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Hexachloro-1,3-butadiene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Hexachlorocyclopentadiene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2-Chloronaphthalene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,6-Dinitrotoluene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Dimethylphthalate	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Dibenzofuran	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Acenaphthene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Fluorene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,6-Dichlorophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	4-Chloro-3-methylphenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,4,6-Trichlorophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,4-Dinitrophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	4-Nitrophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,3,4,6-Tetrachorophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01

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- CERTIFICATE OF ANALYSIS -

Client: Environmental Waste Minimization
719 Roble Road
Allentown PA 18109

Lab#: D014641-001
Sample ID: Free Product Layer
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Attn: David Pohwat
Project: LE Carpenter/ MA Hanna
Date Received: *12-Dec-01*

Collect Date: 10-Nov-01
Collected By: Client
Report Date: *13-Dec-01*

Test Group	Test	Result	Units	PQL	Method	Init / Time	Analysis Date
	2-Methyl-4,6-Dinitrophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Pentachlorophenol	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	2,4-Dinitrotoluene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Hexachlorobenzene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Azobenzene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Diethylphthalate	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	4-Chlorophenyl-phenylether	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	N-Nitrosodiphenylamine	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	1,2-Diphenylhydrazine	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	4-Bromophenyl-phenylether	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Benzidine	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	3,3'-Dichlorobenzidine	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Phenanthrene	398.	ug/kg	130	8270C	ACM 1605	11/30/01
	Anthracene	390.	ug/kg	130	8270C	ACM 1605	11/30/01
	Carbazole	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Fluoranthene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Pyrene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Benzo(a)anthracene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Chrysene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Di-n-butylphthalate	3165.	ug/kg	130	8270C	ACM 1605	11/30/01
	Butylbenzylphthalate	170091.	ug/kg	13004.	8270C	ACM 1605	11/30/01
	Benzo(b)fluoranthene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Benzo(k)fluoranthene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Benzo(a)pyrene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Indeno(1,2,3-cd)pyrene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Dibenzo(a,h))anthracene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	Benzo(ghi)perylene	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01
	DI-n-octylphthalate	32250.	ug/kg	13004.	8270C	ACM 1605	11/30/01
	bis(2-Ethylhexyl)phthalate	< 130.	ug/kg	130	8270C	ACM 1605	11/30/01

Appendix J
Report Certification

REPORT CERTIFICATION
PURSUANT TO N.J.A.C. 7:26E–1.5

"I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement, which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

Mr. Cristopher R. Anderson

PRINTED NAME

Director, Environmental Services

TITLE

L.E. Carpenter & Company

COMPANY

Cristopher Anderson

SIGNATURE

MAR 12, 2002

DATE

Transmittal Letter

RMT, Inc. ("RMT")
222 South Riverside Plaza, Suite 820
Chicago, IL 60606
Tel. (312) 575-0200 • Fax (312) 575-0300

Sent via FedEx Priority Overnight

To:	JOHN M. SCAGNELLI, ESQ. Attorney at Law SCARINCI & HOLLENBECK, LLC 500 Plaza Drive Secaucus, NJ 07096 (201) 392-8900Phone (201) 348-3877 Fax JScagnelli@njlegalink.com	**Date:** **Project No.:** **Subject:**	3/7/02 00-03868.27 L.E. Carpenter & Company Wharton, Morris County, New Jersey 2001 Free Product Investigation
Prepared By:	Nicholas J. Clevett		

John:

Per our recent discussions, please find attached a draft copy of the report entitled *Technical Memorandum - Findings & Recommendation Regarding a Conceptual Free Product Remedial Strategy.*

This report documents the free product investigation RMT performed at the L.E. Carpenter facility in December 2001. We will be submitting this report to the NJDEP and USEPA for review by March 15, 2002.

Please note that the we may modify the Soil Category Excavation Plan (Figure 12) to include the small volume of yellow waste material shown in the TP-11 pictures (Appendix B). All test pit locations are shown on Figure 3.

I am sure we will be talking over the next few weeks. I look forward to meeting you on the 13th.

Nick

cc: Cris Anderson - PolyOne

RMT

Transmittal Letter

RMT, Inc. ("RMT")
222 South Riverside Plaza, Suite 820
Chicago, IL 60606
Tel. (312) 575-0200 • Fax (312) 575-0300

Sent Via FedEx
Priority Overnight

To: Mr. Cristopher R. Anderson
Director, Environmental Services
PolyOne Corporation
33587 Walker Road
Avon Lake, OH 44012
(440) 930-1334 phone

Date: 3/7/02

Project No.: 00-03868.27

Subject: L.E. Carpenter & Company
Wharton, New Jersey
2001 Free Product Investigation

Prepared By: Nicholas J. Clevett

Title Senior Project Manager

Signature:

We are sending you:

☒Report

COPIES	DATE	NO.	DESCRIPTION
1	3/7/02	3868.27	Technical Memorandum - Findings & Recommendation Regarding a Conceptual Free Product Remedial Strategy DRAFT

These items are transmitted as checked below:

☒For review and comment

Cris:

Find attached a draft copy of the above-mentioned report for your review. We are required to submit this report to the NJDEP and USEPA for review by March 15, 2002.

Please note that the we may modify the Soil Category Excavation Plan (Figure 12) to include the small volume of yellow waste material shown in the TP-11 pictures (Appendix B). All test pit locations are shown on Figure 3. Please contact either Jim or me with questions and comments.

Nick

cc: John Scagnelli (Outside Council) SCARINCI & HOLLENBECK, LLC

RMT®

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Chicago, IL 60606
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Date: 3/7/02

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Subject: L.E. Carpenter & Company
Wharton, New Jersey
2001 Free Product Investigation

Prepared By: Nicholas J. Clevett **Title** Senior Project Manager

Signature:

We are sending you:

☒Report

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